CC Anthrax and Listeria.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggg 20

RESULT 8
AAH50658
ID AAH50658 standard; DNA; 20 BP.
XX
AC AAH50658;
XX
DT 22-AUG-2001 (first entry)
XX
DE Immune response modulating related oligonucleotide SEQ ID NO:90.
XX
KW Immunostimulatory; inducing; natural killer cell; lytic activity;
KW unmethylated CpG dinucleotide; immune response; B cell proliferation;
KW Th1; immune activation; interleukin 6; IL-6; interferon gamma;
KW IFN-gamma; cytokine; ss.
XX
OS Synthetic.
XX
PN US6239116-B1.
XX
PD 29-MAY-2001.
XX
PF 30-OCT-1997; 97US-0960774.
XX
PR 30-OCT-1996; 96US-0738652.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GROUP INC.
PA (USSH) US DEPT HEALTH & HUMAN SERVICES.
XX
PI Krieg AM, Kline JN;
XX
DR WPI; 2001-380456/40.
XX
PT Methods for inducing Il-6, interferon-gamma or Il-12, or stimulating
PT natural killer cell lytic activity in a human, comprise administering
PT to the subject or exposing a natural killer cell to immunostimulatory
PT nucleic acids -
XX
PS Disclosure; Column 91; 74pp; English.
XX
CC The present invention describes methods for inducing interleukin 6
CC (IL-6), interferon-gamma (IFN-gamma) or IL-12, or for stimulating
CC natural killer cell lytic activity. The methods comprise administering
CC to the subject or exposing a natural killer cell to an immunostimulatory
CC nucleic acid. Also described are: (1) inducing IL-6 in a subject
CC comprising administering to the subject to induce IL-6 in the subject
CC the immunostimulatory nucleic acid; (2) stimulating natural killer cell
CC lytic activity comprising exposing a natural killer cell to the
CC immunostimulatory nucleic acid to stimulate natural killer cell lytic
CC activity; (3) inducing interferon-gamma in a subject to treat an immune
CC system deficiency comprising administering to the subject to induce
CC interferon-gamma production, the immunostimulatory nucleic acid; and
CC (4) inducing IL-12 in a subject comprising administering to the subject
CC the immunostimulatory nucleic acid. The methods are useful for inducing
CC IL-6, interferon-gamma or IL-12, or stimulating natural killer cell
CC lytic activity in a subject, particularly a human. The methods are
CC particularly useful for modulating an immune response. AAH50571 to
CC AAH50671 represent oligonucleotide sequences used in the exemplification
CC of the present invention.

XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggg 20

RESULT 9
AAH20394
ID AAH20394 standard; DNA; 20 BP.
XX
AC AAH20394;
XX
DT 03-AUG-2001 (first entry)
XX
DE CpG motif containing oligonucleotide SEQ ID #5.
XX
KW Immune system stimulator; CpG motif; CpG receptor; CpG-R; antibacterial;
KW immune response; vaccine adjuvant; tumour immunotherapy; allergy;
KW anti-inflammatory; cystic fibrosis; sepsis; heart disease; chlamydia;
KW inflammatory bowel disease; arthritis; multiple sclerosis; ss.
XX
OS Unidentified.
XX
FH Key Location/Qualifiers
FT modified_base 1..20
FT /*tag= a
FT /mod_base= OTHER
FT /note= "Phosphorothioate internucleoside linkages"
XX
PN WO200132877-A2.
XX
PD 10-MAY-2001.
XX
PF 01-NOV-2000; 2000WO-US41735.
XX
PR 02-NOV-1999; 99US-0163157.
PR 24-NOV-1999; 99US-0167389.
XX
PA (CHIR) CHIRON CORP.
XX
PI Mackichan ML;
XX
DR WPI; 2001-343486/36.
XX
PT Novel CpG receptor and nucleic acid molecule encoding the receptor, for
PT modulating immune response and for identifying compounds of therapeutic
PT use which bind and/or modulate the activity of the receptor -
XX
PS Example 1; Page 14; 41pp; English.
XX
CC Unmethylated CG dinucleotide sequences are commonly found in bacterial
CC DNA, and have been found to stimulate the innate immune system. Natural
CC killer and T cells are activated by exposure to oligonucleotides
CC containing CpG motifs. Oligonucleotides containing CpG motifs can be used
CC as adjuvants in vaccines. The present invention relates to a CpG
CC receptor. The CpG receptor contains a Toll homology domain (THD). The
CC Toll receptor family are associated with responses to pathogens. CpG
CC oligonucleotides may act as stimulators of various immune responses. The
CC CpG receptor or cells expressing the receptor are useful for identifying
CC a compound which binds to or modulates an activity of the CpG receptor.
CC The compounds are useful in e.g. vaccine adjuvants promoting
CC cell-mediated immune responses, antibacterials, (e.g. protection from
CC Listeria infection), tumour immunotherapy, allergy treatment, (e.g.
CC suppressing IgE in human PBMC, shifting from Th2 to Th1) and as
CC anti-inflammatory agents (e.g. for use in cystic fibrosis, sepsis, heart
CC disease, chlamydia, inflammatory bowel disease, arthritis and multiple

```
CC   sclerosis). The present sequence represents a CpG motif containing
CC   oligonucleotide used in examples demonstrating that CpG oligonucleotides
CC   can activate the MAPK pathways and NF-kappaB.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match             100.0%;  Score 20;  DB 22;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT  10
AAF98731
ID   AAF98731 standard; DNA; 20 BP.
XX
AC   AAF98731;
XX
DT   11-JUN-2001  (first entry)
XX
DE   Human IFN-alpha immunostimulatory nucleic acid SEQ ID NO: 1.
XX
KW   Immunostimulatory nucleic acid; ISNA; human; interferon alpha; IFN-alpha;
KW   viral infection; phosphorothioate backbone; palindrome; cancer; ds.
XX
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   modified_base    1..2
FT                    /*tag=  a
FT                    /mod_base= "OTHER"
FT                    /note= "phosphorothioate linkage"
FT   modified_base    15..19
FT                    /*tag=  b
FT                    /mod_base= "OTHER"
FT                    /note= "phosphorothioate linkage"
XX
PN   WO200122990-A2.
XX
PD   05-APR-2001.
XX
PF   27-SEP-2000; 2000WO-US26527.
XX
PR   27-SEP-1999;   99US-0156147.
XX
PA   (COLE-) COLEY PHARM GROUP INC.
PA   (IOWA ) UNIV IOWA RES FOUND.
XX
PI   Hartmann G,  Bratzler RL,  Krieg A;
XX
DR   WPI; 2001-290487/30.
XX
PT   Improving the efficacy of treatments involving the administration of
PT   interferon-alpha by co-administering an isolated immunostimulatory
PT   nucleic acid -
XX
PS   Claim 19; Page 73; 168pp; English.
XX
CC   The present invention describes an improvement to a method requiring the
CC   administration of interferon alpha (IFN-alpha), involving administering
CC   an immunostimulatory nucleic acid (ISNA). The sequences of a number of
CC   such nucleic acids are also provided. These may comprise oligonucleotides
CC   with phosphorothioate backbones, palindromes, or G-rich sequences. The
CC   sequences of the invention are useful in the treatment of proliferative
CC   diseases, such as cancers, and viral infections. The present sequence is
CC   an example of an immunostimulatory oligonucleotide.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match             100.0%;  Score 20;  DB 22;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT  11
AAF98854
ID   AAF98854 standard; DNA; 20 BP.
XX
AC   AAF98854;
XX
DT   11-JUN-2001  (first entry)
XX
DE   Poly-G immunostimulatory nucleic acid SEQ ID NO: 135.
XX
KW   Immunostimulatory nucleic acid; ISNA; human; interferon alpha; IFN-alpha;
KW   viral infection; phosphorothioate backbone; palindrome; cancer; ds.
XX
OS   Synthetic.
XX
PN   WO200122990-A2.
XX
PD   05-APR-2001.
XX
PF   27-SEP-2000; 2000WO-US26527.
XX
PR   27-SEP-1999;   99US-0156147.
XX
PA   (COLE-) COLEY PHARM GROUP INC.
PA   (IOWA ) UNIV IOWA RES FOUND.
XX
PI   Hartmann G,  Bratzler RL,  Krieg A;
XX
DR   WPI; 2001-290487/30.
XX
PT   Improving the efficacy of treatments involving the administration of
PT   interferon-alpha by co-administering an isolated immunostimulatory
PT   nucleic acid -
XX
PS   Disclosure; Page 24; 168pp; English.
XX
CC   The present invention describes an improvement to a method requiring the
CC   administration of interferon alpha (IFN-alpha), involving administering
CC   an immunostimulatory nucleic acid (ISNA). The sequences of a number of
CC   such nucleic acids are also provided. These may comprise oligonucleotides
CC   with phosphorothioate backbones, palindromes, or G-rich sequences. The
CC   sequences of the invention are useful in the treatment of proliferative
CC   diseases, such as cancers, and viral infections. The present sequence is
CC   an example of an immunostimulatory oligonucleotide.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match             100.0%;  Score 20;  DB 22;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT  12
AAF99390
ID   AAF99390 standard; DNA; 20 BP.
XX
AC   AAF99390;
XX
```

DT 12-JUN-2001 (first entry)
XX
DE Immunostimulatory nucleic acid #506.
XX
KW Vaccine; cytostatic; virucidal; bactericidal; fungicidal; anti-parasitic;
KW immunostimulatory; tumour; viral infection; bacterial infection;
KW fungal infection; parasitic infection; cancer; asthma;
KW infectious disease; allergy; immune deficiency; phosphorothioate; ss.
XX
OS Synthetic.
XX
PN WO200122972-A2.
XX
PD 05-APR-2001.
XX
PF 25-SEP-2000; 2000WO-US26383.
XX
PR 25-SEP-1999; 99US-0156113.
PR 27-SEP-1999; 99US-0156135.
PR 23-AUG-2000; 2000US-0227436.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GMBH.
XX
PI Krieg AM, Schetter C, Vollmer J;
XX
DR WPI; 2001-273485/28.
XX
PT Vaccinating against tumors, infectious diseases, allergies and asthma
PT using immunostimulatory Py-rich and TG nucleic acids -
XX
PS Claim 101; Page 48; 338pp; English.
XX
CC The present invention relates to a method for stimulating an immune
CC response. The method comprises administering an immunostimulatory nucleic
CC acid to a non-rodent subject in sufficient quantity to stimulate an
CC immune response. The present sequence is one such immunostimulatory
CC nucleic acid. The immunostimulatory nucleic acids can be pyrimidine rich
CC (py-rich) or thymidine (T) rich. The method is used to vaccinate subjects
CC against tumour antigens, viral antigens (e.g. herpesviridae, retroviridae
CC and/or orthomyxoviridae), bacterial antigens (e.g. toxoplasma,
CC haemophilus, campylobacter, clostridium, Escherichia coli and/or
CC staphylococcus), fungal antigens and/or parasitic antigens. The method is
CC also useful for preventing cancer, asthma, infectious disease, allergy or
CC immune deficiency. The present sequence can also be used to redirect a
CC Th2 to a Th1 immune response and to activate immune cells.
CC Note: the present sequence may have a phosphorothioate backbone.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgagggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgagggggg 20

RESULT 13
AAF99567
ID AAF99567 standard; DNA; 20 BP.
XX
AC AAF99567;
XX
DT 12-JUN-2001 (first entry)
XX
DE Immunostimulatory nucleic acid #683.
XX
KW Vaccine; cytostatic; virucidal; bactericidal; fungicidal; anti-parasitic;
KW immunostimulatory; tumour; viral infection; bacterial infection;
KW fungal infection; parasitic infection; cancer; asthma;
KW infectious disease; allergy; immune deficiency; phosphorothioate; ss.
XX
OS Synthetic.
XX
PN WO200122972-A2.
XX
PD 05-APR-2001.
XX
PF 25-SEP-2000; 2000WO-US26383.
XX
PR 25-SEP-1999; 99US-0156113.
PR 27-SEP-1999; 99US-0156135.
PR 23-AUG-2000; 2000US-0227436.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GMBH.
XX
PI Krieg AM, Schetter C, Vollmer J;
XX
DR WPI; 2001-273485/28.
XX
PT Vaccinating against tumors, infectious diseases, allergies and asthma
PT using immunostimulatory Py-rich and TG nucleic acids -
XX
PS Claim 101; Page 53; 338pp; English.
XX
CC The present invention relates to a method for stimulating an immune
CC response. The method comprises administering an immunostimulatory nucleic
CC acid to a non-rodent subject in sufficient quantity to stimulate an
CC immune response. The present sequence is one such immunostimulatory
CC nucleic acid. The immunostimulatory nucleic acids can be pyrimidine rich
CC (py-rich) or thymidine (T) rich. The method is used to vaccinate subjects
CC against tumour antigens, viral antigens (e.g. herpesviridae, retroviridae
CC and/or orthomyxoviridae), bacterial antigens (e.g. toxoplasma,
CC haemophilus, campylobacter, clostridium, Escherichia coli and/or
CC staphylococcus), fungal antigens and/or parasitic antigens. The method is
CC also useful for preventing cancer, asthma, infectious disease, allergy or
CC immune deficiency. The present sequence can also be used to redirect a
CC Th2 to a Th1 immune response and to activate immune cells.
CC Note: the present sequence may have a phosphorothioate backbone.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgagggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgagggggg 20

RESULT 14
AAF99763
ID AAF99763 standard; DNA; 20 BP.
XX
AC AAF99763;
XX
DT 12-JUN-2001 (first entry)
XX
DE Immunostimulatory nucleic acid #879.
XX
KW Vaccine; cytostatic; virucidal; bactericidal; fungicidal; anti-parasitic;
KW immunostimulatory; tumour; viral infection; bacterial infection;
KW fungal infection; parasitic infection; cancer; asthma;
KW infectious disease; allergy; immune deficiency; phosphorothioate; ss.
XX
OS Synthetic.
XX
PN WO200122972-A2.
XX
PD 05-APR-2001.

XX
PF 25-SEP-2000; 2000WO-US26383.
XX
PR 25-SEP-1999; 99US-0156113.
PR 27-SEP-1999; 99US-0156135.
PR 23-AUG-2000; 2000US-0227436.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GMBH.
XX
PI Krieg AM, Schetter C, Vollmer J;
XX
DR WPI; 2001-273485/28.
XX
PT Vaccinating against tumors, infectious diseases, allergies and asthma
PT using immunostimulatory Py-rich and TG nucleic acids -
XX
PS Claim 101; Page 57; 338pp; English.
XX
CC The present invention relates to a method for stimulating an immune
CC response. The method comprises administering an immunostimulatory nucleic
CC acid to a non-rodent subject in sufficient quantity to stimulate an
CC immune response. The present sequence is one such immunostimulatory
CC nucleic acid. The immunostimulatory nucleic acids can be pyrimidine rich
CC (py-rich) or thymidine (T) rich. The method is used to vaccinate subjects
CC against tumour antigens, viral antigens (e.g. herpesviridae, retroviridae
CC and/or orthomyxoviridae), bacterial antigens (e.g. toxoplasma,
CC haemophilus, campylobacter, clostridium, Escherichia coli and/or
CC staphylococcus), fungal antigens and/or parasitic antigens. The method is
CC also useful for preventing cancer, asthma, infectious disease, allergy or
CC immune deficiency. The present sequence can also be used to redirect a
CC Th2 to a Th1 immune response and to activate immune cells.
CC Note: the present sequence may have a phosphorothioate backbone.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

RESULT 15
AAF99764
ID AAF99764 standard; DNA; 20 BP.
XX
AC AAF99764;
XX
DT 12-JUN-2001 (first entry)
XX
DE Immunostimulatory nucleic acid #880.
XX
KW Vaccine; cytostatic; virucidal; bactericidal; fungicidal; anti-parasitic;
KW immunostimulatory; tumour; viral infection; bacterial infection;
KW fungal infection; parasitic infection; cancer; asthma;
KW infectious disease; allergy; immune deficiency; phosphorothioate; ss.
XX
OS Synthetic.
XX
PN WO200122972-A2.
XX
PD 05-APR-2001.
XX
PF 25-SEP-2000; 2000WO-US26383.
XX
PR 25-SEP-1999; 99US-0156113.
PR 27-SEP-1999; 99US-0156135.
PR 23-AUG-2000; 2000US-0227436.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GMBH.
XX
PI Krieg AM, Schetter C, Vollmer J;
XX
DR WPI; 2001-273485/28.
XX
PT Vaccinating against tumors, infectious diseases, allergies and asthma
PT using immunostimulatory Py-rich and TG nucleic acids -
XX
PS Claim 101; Page 57; 338pp; English.
XX
CC The present invention relates to a method for stimulating an immune
CC response. The method comprises administering an immunostimulatory nucleic
CC acid to a non-rodent subject in sufficient quantity to stimulate an
CC immune response. The present sequence is one such immunostimulatory
CC nucleic acid. The immunostimulatory nucleic acids can be pyrimidine rich
CC (py-rich) or thymidine (T) rich. The method is used to vaccinate subjects
CC against tumour antigens, viral antigens (e.g. herpesviridae, retroviridae
CC and/or orthomyxoviridae), bacterial antigens (e.g. toxoplasma,
CC haemophilus, campylobacter, clostridium, Escherichia coli and/or
CC staphylococcus), fungal antigens and/or parasitic antigens. The method is
CC also useful for preventing cancer, asthma, infectious disease, allergy or
CC immune deficiency. The present sequence can also be used to redirect a
CC Th2 to a Th1 immune response and to activate immune cells.
CC Note: the present sequence may have a phosphorothioate backbone.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

Search completed: June 6, 2002, 00:48:22
Job time: 4024 sec

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AAA90449
ID   AAA90449 standard; DNA; 20 BP.
XX
AC   AAA90449;
XX
DT   10-JAN-2001  (first entry)
XX
DE   CpG adjuvant oligonucleotide, SEQ ID NO:3.
XX
KW   CpG oligonucleotide; CpG motif; adjuvant; microdroplet emulsion;
KW   microemulsion; adsorbent microparticle; vaccine; Th1 immune response;
KW   viral infection; bacterial infection; parasitic infection; HCV; HBV;
KW   hepatitis C virus; hepatitis B virus; herpes simplex virus; HSV; HIV;
KW   human immunodeficiency virus; cytomegalovirus; CMV; influenza virus;
KW   rabies virus; cholera; diphtheria; tetanus; pertussis;
KW   Helicobacter pylori; Haemophilus influenzae; malaria; ss.
XX
OS   Synthetic.
XX
PN   WO200050006-A2.
XX
PD   31-AUG-2000.
XX
PF   09-FEB-2000; 2000WO-US03331.
XX
PR   26-FEB-1999;   99US-0121858.
PR   29-JUL-1999;   99US-0146391.
PR   28-OCT-1999;   99US-0161997.
XX
PA   (CHIR ) CHIRON CORP.
XX
PI   O'Hagan D,  Ott GS,  Donnelly J,  Kazzaz J,  Ugozzoli M,  Singh M;
PI   Barackman J;
XX
DR   WPI; 2000-587123/55.
XX
PT   Microemulsion having an adsorbent surface comprising a microdroplet
PT   emulsion consisting of a metabolizable oil and an emulsifying agent
PT   which is a detergent, useful as a vaccine to treat bacterial, viral,
PT   and parasitic infection  -
XX
PS   Claim 17; Page 40; 95pp; English.
XX
CC   The invention relates to a microdroplet emulsion (microemulsion) with an
CC   adsorbent surface, and which comprises a metabolisable oil and an
CC   emulsifying agent (a detergent). It also relates to a composition
CC   comprising the microemulsion and a microparticle with an adsorbent
CC   surface, where the microparticle comprises a polymer selected from a
CC   poly(alpha-hydroxy acid), a polyhydroxy butyric acid, a
CC   polycaprolactone, a polyorthoester, a polyanhydride, and a
CC   polycyanoacrylate, and a second detergent. The surface of the
CC   microparticles efficiently adsorb biologically active macromolecules such
CC   as DNA, polypeptides, antigens, hormones, pharmaceuticals, enzymes,
CC   mediators of transcription or translation, metabolic intermediates and
CC   adjuvants. Additionally, a second biologically active molecule may be
CC   encapsulated within the microparticle. The microemulsion can be used in
CC   methods of immunising a host animal, particularly a human, against a
CC   viral, bacterial or parasitic infection, and in methods of increasing a
CC   Th1 immune response. The microemulsions (having the appropriate antigens
CC   adsorbed) may be particularly used as vaccines for hepatitis C virus
CC   (HCV), hepatitis B virus (HBV), herpes simplex virus (HSV), human
CC   immunodeficiency virus (HIV), cytomegalovirus (CMV), influenza virus, and
CC   rabies virus; the bacteria which cause cholera, diphtheria, tetanus and
CC   pertussis; Helicobacter pylori and Haemophilus influenzae; and
CC   malaria-causing parasites. Sequences AAA90447-A90467 represent Th1
CC   lymphocyte stimulating oligonucleotides containing at least one CpG motif
CC   which are claimed for use as adjuvants in the compositions of the
CC   invention.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match          100.0%;  Score 20;  DB 21;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgaggggggg 20
           ||||||||||||||||||||
Db       1 ggggtcaacgttgaggggggg 20


RESULT   7
AAS09639
ID   AAS09639 standard; DNA; 20 BP.
XX
AC   AAS09639;
XX
DT   26-SEP-2001  (first entry)
XX
DE   Immunoreactive CpG sequence-containing oligonucleotide #89.
XX
KW   CpG sequence; immune response; non-B cell activation; interferon gamma;
KW   IFN-gamma; humoral; antibody production; interleukin-6 production;
KW   therapeutic; allergy; asthma; cancer; autoimmune disorder; infection;
KW   bio-warfare; vaccine; antisense therapy; eczema; allergic rhinitis;
KW   coryza; hay fever; urticaria; hives; food allergy; atopic condition;
KW   hepatitis; human immunodeficiency virus; HIV; malaria; Francisella;
KW   lupus erythematosus; rheumatoid arthritis; multiple sclerosis;
KW   schistosomiasis; tuberculosis; acquired immunodeficiency syndrome; AIDS;
KW   Leishmania; Ebola; Anthrax; Listeria; ss.
XX
OS   Synthetic.
XX
PN   WO200151500-A1.
XX
PD   19-JUL-2001.
XX
PF   12-JAN-2001; 2001WO-US01122.
XX
PR   14-JAN-2000; 2000US-0176115.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Klinman D,  Ishii K,  Verthelyi D;
XX
DR   WPI; 2001-442129/47.
XX
PT   Oligodeoxynucleotides for inducing an immune response to treat and
PT   prevent an allergic reaction, cancer, an autoimmune disorder and
PT   symptoms resulting from exposure to bio-warfare agents, comprise
PT   multiple CpG sequences  -
XX
PS   Claim 5; Page 42; 48pp; English.
XX
CC   AAS09551-AAS09662 represent oligodeoxynucleotides (ODN) of at least 10
CC   nucleotides comprising multiple CpG sequences, where one of the CpG
CC   sequences is different from another of the multiple CpG sequences.
CC   The ODN are useful for inducing an immune response, preferably a cell-
CC   mediated immune response, involving non-B cell activation, interferon
CC   gamma (IFN-gamma) production or a humoral immune response involving B
CC   cell activation, antibody and interleukin-6 production in a host, for
CC   treating, preventing or ameliorating an allergic reaction, e.g. asthma,
CC   cancer, e.g. solid tumour cancer, a disease associated with the immune
CC   system e.g. autoimmune disorder or an immune system deficiency, infection
CC   or a symptom resulting from exposure to bio-warfare agent in a human. The
CC   induction of immune response improves the efficacy of a vaccine and is
CC   used in antisense therapy. The ODN are useful for treating, preventing or
CC   ameliorating allergic reactions, including eczema, allergic rhinitis or
CC   coryza, hay fever, bronchial asthma, urticaria (hives), food allergies
CC   and other atopic conditions, for improving the efficacy of vaccines
CC   against hepatitis A, B and C, human immunodeficiency virus (HIV) and
CC   malaria, for treating immune system deficiencies, e.g. lupus
CC   erythematosus and autoimmune diseases such as rheumatoid arthritis and
CC   multiple sclerosis, infections including Francisella, schistosomiasis,
CC   tuberculosis, acquired immunodeficiency syndrome (AIDS), Leishmania and
CC   symptoms resulting from exposure of bio-warfare agent, including Ebola,
```

XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 19; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Db 1 ggggtcaacgttgaggggggg 20

RESULT 4
AAV74238
ID AAV74238 standard; DNA; 20 BP.
XX
AC AAV74238;
XX
DT 15-MAR-1999 (first entry)
XX
DE CpG-N motif S-ODN 1628 DNA.
XX
KW CpG-N motif; immunostimulation; antigen; CpG-S motif; immunisation; ODN;
KW viral antigen; bacterial antigen; parasite; therapeutic; growth factor;
KW toxin; tumour suppressor; cytokine; apoptotic protein; interferon;
KW hormone; clotting factor; ligand; receptor; oligodeoxynucleotide; ss.
XX
OS Synthetic.
XX
PN WO9852581-A1.
XX
PD 26-NOV-1998.
XX
PF 20-MAY-1998; 98WO-US10408.
XX
PR 20-MAY-1997; 97US-0047233.
PR 20-MAY-1997; 97US-0047209.
XX
PA (OTTA-) OTTAWA CIVIC HOSPITAL LOEB RES INST.
PA (QIAG-) QIAGEN GMBH.
PA (IOWA-) UNIV IOWA RES FOUND.
XX
PI Davis HL, Krieg AM, Schorr J, Wu T;
XX
DR WPI; 1999-059712/05.
XX
PT Use of neutralising CpG and stimulating CpG motifs in DNA vectors -
PT for enhancing the immunostimulatory effect of an antigen or
PT enhancing the expression of a therapeutic polypeptide
XX
PS Example 1; Page 64; 109pp; English.
XX
CC AAV74237-V74253 are oligodeoxynucleotide (ODN) primers used to describe
CC a method for enhancing the immunostimulatory effect of an antigen
CC encoded by nucleic acid contained in a nucleic acid construct. The
CC method involves determining the CpG-N and CpG-S motifs present in the
CC construct, removing neutralising CpG (CpG-N) motifs and optionally
CC inserting stimulatory CpG (CpG-S) motifs in the construct, thereby
CC producing a nucleic acid construct having enhanced immunostimulatory
CC efficacy. The method can be used for immunisation against viral antigens,
CC e.g. from hepatitis B virus (HBV), bacterial antigens or an antigen
CC derived from a parasite. They can also be used for expression of a
CC therapeutic polypeptide, e.g. growth factors, toxins, tumour suppressors,
CC cytokines, apoptotic proteins, interferons, hormones, clotting factors,
CC ligands and receptors.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 20; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Db 1 ggggtcaacgttgaggggggg 20

RESULT 5
AAV74245
ID AAV74245 standard; DNA; 20 BP.
XX
AC AAV74245;
XX
DT 15-MAR-1999 (first entry)
XX
DE CpG-N motif SOS-ODN 1585 DNA.
XX
KW CpG-N motif; immunostimulation; antigen; CpG-S motif; immunisation; ODN;
KW viral antigen; bacterial antigen; parasite; therapeutic; growth factor;
KW toxin; tumour suppressor; cytokine; apoptotic protein; interferon;
KW hormone; clotting factor; ligand; receptor; oligodeoxynucleotide; ss.
XX
OS Synthetic.
XX
PN WO9852581-A1.
XX
PD 26-NOV-1998.
XX
PF 20-MAY-1998; 98WO-US10408.
XX
PR 20-MAY-1997; 97US-0047233.
PR 20-MAY-1997; 97US-0047209.
XX
PA (OTTA-) OTTAWA CIVIC HOSPITAL LOEB RES INST.
PA (QIAG-) QIAGEN GMBH.
PA (IOWA-) UNIV IOWA RES FOUND.
XX
PI Davis HL, Krieg AM, Schorr J, Wu T;
XX
DR WPI; 1999-059712/05.
XX
PT Use of neutralising CpG and stimulating CpG motifs in DNA vectors -
PT for enhancing the immunostimulatory effect of an antigen or
PT enhancing the expression of a therapeutic polypeptide
XX
PS Example 1; Page 64; 109pp; English.
XX
CC AAV74237-V74253 are oligodeoxynucleotide (ODN) primers used to describe
CC a method for enhancing the immunostimulatory effect of an antigen
CC encoded by nucleic acid contained in a nucleic acid construct. The
CC method involves determining the CpG-N and CpG-S motifs present in the
CC construct, removing neutralising CpG (CpG-N) motifs and optionally
CC inserting stimulatory CpG (CpG-S) motifs in the construct, thereby
CC producing a nucleic acid construct having enhanced immunostimulatory
CC efficacy. The method can be used for immunisation against viral antigens,
CC e.g. from hepatitis B virus (HBV), bacterial antigens or an antigen
CC derived from a parasite. They can also be used for expression of a
CC therapeutic polypeptide, e.g. growth factors, toxins, tumour suppressors,
CC cytokines, apoptotic proteins, interferons, hormones, clotting factors,
CC ligands and receptors.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 20; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Db 1 ggggtcaacgttgaggggggg 20

RESULT 6

XX
PS Claim 5; Page 39; 45pp; English.
XX
CC AAT16894-T16898 are immunomodulatory oligonucleotides contg. at least
CC one unmethylated C-G dinucleotide. The oligonucleotides can be used
CC to activate B cells and natural killer cells. They can be used for
CC treating, preventing or ameliorating an immune system deficiency,
CC e.g. a tumour, cancer or a viral, fungal, bacterial or parasitic
CC infection. They are also useful in stimulating a subject's response
CC to a vaccine.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 17; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

RESULT 2
AAV47684
ID AAV47684 standard; DNA; 20 BP.
XX
AC AAV47684;
XX
DT 20-NOV-1998 (first entry)
XX
DE Unmethylated CpG dinucleotide 1585.
XX
KW Unmethylated CpG dinucleotide; immune response; bacterial meningitis;
KW natural killer cell activation; NK cell; Th2 response; neonatal sepsis;
KW pulmonary disorder; asthma; environmentally induced airway disease;
KW bacterial infection; endotoxaemia; therapy; cystic fibrosis;
KW inflammatory bowel disease; ss.
XX
OS Synthetic.
XX
PN WO9837919-A1.
XX
PD 03-SEP-1998.
XX
PF 25-FEB-1998; 98WO-US03678.
XX
PR 28-FEB-1997; 97US-0039405.
XX
PA (IOWA) UNIV IOWA RES FOUND.
XX
PI Krieg AM, Schwartz DA;
XX
DR WPI; 1998-480941/41.
XX
PT Use of nucleic acids containing an unmethylated CpG - for treating a
PT subject having or at risk of having an acute decrement in air flow
PT or inhibiting an inflammatory response
XX
PS Claim 35; Page 27; 65pp; English.
XX
CC This sequence represents an unmethylated CpG dinucleotide, and can be
CC used in the method of the invention. The method is for treating a subject
CC having, or at risk of having an acute decrement in air flow, comprising
CC administering a nucleic acid sequence containing at least one
CC unmethylated CpG. The nucleic acids containing an unmethylated CpG
CC dinucleotide affect an immune response in a subject by activating natural
CC killer cells (NK) or redirecting a subject's immune response from a Th2
CC to a Th1 response by inducing monocytic and other cells to produce Th1
CC cytokines. They can be used to treat pulmonary disorders having an
CC immunologic component, such as asthma or environmentally induced airway
CC disease. They can also be used to treat diseases associated with
CC Gram-positive bacterial infections or endotoxaemia including bacterial
CC meningitis, neonatal sepsis, cystic fibrosis, inflammatory bowel disease
CC and liver cirrhosis, Gram-negative pneumonia, Gram-negative abdominal
CC abscess, haemorrhagic shock; disseminated intravascular coagulation, or
CC an inflammatory response to lipopolysaccharide.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 19; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

RESULT 3
AAV27654
ID AAV27654 standard; DNA; 20 BP.
XX
AC AAV27654;
XX
DT 01-OCT-1998 (first entry)
XX
DE Immunostimulatory oligodeoxyribonucleotide of the invention.
XX
KW Immunostimulatory; oligodeoxyribonucleotide; ODN;
KW unmethylated CpG dinucleotide; activate; lymphocyte; immune response;
KW Th2; Th1; cytokine; treatment; prevention; asthma; autoimmune disease;
KW desensitisation therapy; artificial adjuvant; antibody generation; ss.
XX
OS Synthetic.
XX
PN WO9818810-A1.
XX
PD 07-MAY-1998.
XX
PF 30-OCT-1997; 97WO-US19791.
XX
PR 30-OCT-1996; 96US-0738652.
XX
PA (IOWA) UNIV IOWA RES FOUND.
XX
PI Kline JN, Krieg AM;
XX
DR WPI; 1998-272127/24.
XX
PT New immunostimulatory nucleic acid molecules - which contain at
PT least one unmethylated CpG dinucleotide, used for treating e.g.
PT tumours, infections or autoimmune disease
XX
PS Claim 26; Page 83; 109pp; English.
XX
CC AAV27641-751 represent immunostimulatory oligodeoxyribonucleotides
CC (ODNs) of the invention. The ODNs contain at least one unmethylated CpG
CC dinucleotide, and have the formula:
CC 5' N1X1CGX2N2 3', where at least one nucleotide separates consecutive
CC CpGs, X1 is adenine, guanine, or thymine, X2 is cytosine or thymine, N
CC is any nucleotide and N1+N2 is 0-26 bases with the provision that N1 and
CC N2 does not contain a CCGG tetramer or more than one CCG or CGG trimer
CC OR 5' NX1X2CGX3X4N 3', where at least one nucleotide separates
CC consecutive CpGs, X1 and X2 are selected from GpT, GpG, GpA, ApT and ApA,
CC X3and X4 are selected from TpT or CpT, N is any nucleotide and N1+N2 is
CC 0-26 bases with the provision that N1 and N2 does not contain a CCGG
CC tetramer or more than one CCG or CGG trimer.
CC The ODNs activate lymphocytes in a subject and redirect a subject's
CC immune response from a Th2 to a Th1 (e.g. by inducing monocytic cells
CC and other cells to produce Th1 cytokines, including IL-12, IFN-gamma and
CC GM-CSF). The ODNs can be used to treat or prevent an asthmatic disorder,
CC autoimmune diseases, in desensitisation therapy, as an artificial
CC adjuvant during antibody generation in a mammal such as a mouse or a
CC human.

GenCore version 4.5

OM nucleic - nucleic search, using sw model

Run on: June 5, 2002, 23:41:18 ; Search time 211.62 Seconds
(without alignments)
162.264 Million cell updates/sec

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Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 1736436 seqs, 858457221 residues

Total number of hits satisfying chosen parameters: 3472872

Minimum DB seq length: 0
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Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	20	100.0	20	17	AAT16894	Immunomodulatory o
2	20	100.0	20	19	AAV47684	Unmethylated CpG d
3	20	100.0	20	19	AAV27654	Immunostimulatory
4	20	100.0	20	20	AAV74238	CpG-N motif S-ODN
5	20	100.0	20	20	AAV74245	CpG-N motif SOS-OD
6	20	100.0	20	21	AAA90449	CpG adjuvant oligo
7	20	100.0	20	22	AAS09639	Immunoreactive CpG
8	20	100.0	20	22	AAH50658	Immune response mo
9	20	100.0	20	22	AAH20394	CpG motif containi
10	20	100.0	20	22	AAF98731	Human IFN-alpha im
11	20	100.0	20	22	AAF98854	Poly-G immunostimu
12	20	100.0	20	22	AAF99390	Immunostimulatory
13	20	100.0	20	22	AAF99567	Immunostimulatory
14	20	100.0	20	22	AAF99763	Immunostimulatory
15	20	100.0	20	22	AAF99764	Immunostimulatory
16	20	100.0	20	22	AAF59504	Immunostimulatory
17	20	100.0	20	22	AAF27750	P. falciparum vacc
18	20	100.0	20	22	AAC80669	Immunogenic CpG ol
19	20	100.0	20	22	AAA92361	CG motif and CFA c
20	20	100.0	20	22	AAH19262	Oligonucleotide 15
21	20	100.0	21	22	AAF98875	Immunostimulatory
22	20	100.0	21	22	AAF99798	Immunostimulatory
23	20	100.0	24	22	AAF99389	Immunostimulatory
24	19	95.0	19	22	AAS09596	Immunoreactive CpG
25	19	95.0	19	22	AAC80626	Immunogenic CpG ol
26	18.4	92.0	20	19	AAV27677	Immunostimulatory
27	18.4	92.0	20	21	AAZ48834	B-cell stimulating
28	18.4	92.0	20	22	AAD02961	Immunostimulatory
29	17.4	87.0	19	19	AAV52539	Unmethylated CpG d
30	17.4	87.0	19	20	AAZ41898	IL-12 secretion in
31	17.4	87.0	19	21	AAZ60970	Nucleotide sequenc
32	17.4	87.0	19	21	AAZ47638	Parasitic infectio
33	17.4	87.0	19	21	AAZ47845	Immunostimulatory
34	17.4	87.0	19	21	AAZ47974	Immune remodeling
35	17.4	87.0	19	22	AAH50582	Natural killer cel
36	17.4	87.0	19	22	AAF98795	CpG immunostimulat
37	16.8	84.0	20	21	AAZ99181	Immunostimulatory
38	16.8	84.0	20	22	AAS09641	Immunoreactive CpG
39	16.8	84.0	20	22	AAF98735	Human IFN-alpha im
40	16.8	84.0	20	22	AAF98736	Human IFN-alpha im
41	16.8	84.0	20	22	AAF98754	Human IFN-alpha im
42	16.8	84.0	20	22	AAF98855	Poly-G immunostimu
43	16.8	84.0	20	22	AAF98870	Immunostimulatory
44	16.8	84.0	20	22	AAF99231	Immunostimulatory
45	16.8	84.0	20	22	AAF99704	Immunostimulatory

ALIGNMENTS

RESULT 1
AAT16894
ID AAT16894 standard; DNA; 20 BP.
XX
AC AAT16894;
XX
DT 06-SEP-1996 (first entry)
XX
DE Immunomodulatory oligonucleotide contg. unmethylated C-G dinucleotide.
XX
KW Unmethylated; immunomodulator; B cell activation; vaccine;
KW response stimulation; autoimmune disease; infection; ss.
XX
OS Synthetic.
XX
PN WO9602555-A1.
XX
PD 01-FEB-1996.
XX
PF 07-FEB-1995; 95WO-US01570.
XX
PR 15-JUL-1994; 94US-0276358.
XX
PA (IOWA) UNIV IOWA STATE RES FOUND INC.
XX
PI Krieg AM;
XX
DR WPI; 1996-105847/11.
XX
PT Immunomodulatory oligo:nucleotide(s) contg. an un-methylated CpG
PT di-nucleotide - used for stimulating activity or when methylated
PT for inhibitory activity

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BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


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RESULT  15
BD009060
LOCUS       BD009060                 20 bp    DNA     linear   PAT 31-JAN-2002
DEFINITION  Immunostimulatory nucleic acid molecules.
ACCESSION   BD009060
VERSION     BD009060.1  GI:18637433
KEYWORDS    JP 2001503267-A/12.
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M. and Kline,J.N.
  TITLE     Immunostimulatory nucleic acid molecules
  JOURNAL   Patent: JP 2001503267-A 12 13-MAR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION
COMMENT     OS   Artificial Sequence
            PN   JP 2001503267-A/12
            PD   13-MAR-2001
            PF   30-OCT-1997 JP 1998520784
            PR   30-OCT-1996 US    08/738652
            PI   ARTHUR M KRIEG,JOEL N KLINE
            PC   C07H21/00,C07H21/02,C07H21/04,A61K31/175,A61K31/335,A61K31/47,
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FEATURES             Location/Qualifiers
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            interferon
  JOURNAL   Patent: WO 0122990-A 135 05-APR-2001;
            Coley Pharmaceutical Group, Inc. (US) ; UNIVERSITY OF IOWA RESEARCH
            FOUNDATION (US)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
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ORIGIN


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AX135634
LOCUS       AX135634                  20 bp    DNA     linear   PAT 29-MAY-2001
DEFINITION  Sequence 5 from Patent WO0132877.
ACCESSION   AX135634
VERSION     AX135634.1  GI:14271904
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Mackichan,M.L.
  TITLE     Cpg receptor (cpg-r) and methods relating thereto
  JOURNAL   Patent: WO 0132877-A 5 10-MAY-2001;
            CHIRON CORPORATION (US)
FEATURES             Location/Qualifiers
     source          1. .20
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                     /note="CpG oligonucleotide"
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ORIGIN


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Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT  12
AX194489
LOCUS       AX194489                  20 bp    DNA     linear   PAT 28-AUG-2001
DEFINITION  Sequence 89 from Patent WO0151500.
ACCESSION   AX194489
VERSION     AX194489.1  GI:15385145
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Klinman,D., Ishii,K. and Verthelyi,D.
  TITLE     Oligodeoxynucleotide and its use to induce an immune response
  JOURNAL   Patent: WO 0151500-A 89 19-JUL-2001;
            Secretary of the Department of Health and Human Services (US)
FEATURES             Location/Qualifiers
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ORIGIN


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RESULT  13
AX355408
LOCUS       AX355408                  20 bp    DNA     linear   PAT 06-FEB-2002
DEFINITION  Sequence 436 from Patent WO0197843.
ACCESSION   AX355408
VERSION     AX355408.1  GI:18620076
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (sites)
  AUTHORS   Weiner,G. and Hartmann,G.
  TITLE     Methods for enhancing antibody-induced cell lysis and treating
            cancer
  JOURNAL   Patent: WO 0197843-A 436 27-DEC-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US)
FEATURES             Location/Qualifiers
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                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
                     /note="Synthetic oligonucleotide-chimeric
                     phosphorothioate/phosphodiester backbone with
                     phosphorothioate at 5' and 3' ends"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


  Query Match             100.0%;  Score 20;  DB 6;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT  14
AX355409
LOCUS       AX355409                  20 bp    DNA     linear   PAT 06-FEB-2002
DEFINITION  Sequence 437 from Patent WO0197843.
ACCESSION   AX355409
VERSION     AX355409.1  GI:18620077
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (sites)
  AUTHORS   Weiner,G. and Hartmann,G.
  TITLE     Methods for enhancing antibody-induced cell lysis and treating
            cancer
  JOURNAL   Patent: WO 0197843-A 437 27-DEC-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US)
FEATURES             Location/Qualifiers
     source          1. .20
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                     /note="Synthetic oligonucleotide-phosphorothioate
                     backbone"
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            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M., Schetter,C. and Vollmer,J.C.
  TITLE     Immunostimulatory nucleic acids
  JOURNAL   Patent: WO 0122972-A 767 05-APR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US) ; Coley Pharmaceutical
            GmbH (DE)
FEATURES             Location/Qualifiers
     source          1. .20
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                     /db_xref="taxon:32630"
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  Best Local Similarity   100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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Db      1 GGGGTCAACGTTGAGGGGGG 20


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LOCUS       AX104776                  20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 968 from Patent WO0122972.
ACCESSION   AX104776
VERSION     AX104776.1  GI:13920973
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M., Schetter,C. and Vollmer,J.C.
  TITLE     Immunostimulatory nucleic acids
  JOURNAL   Patent: WO 0122972-A 968 05-APR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US) ; Coley Pharmaceutical
            GmbH (DE)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


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  Best Local Similarity   100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
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Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   8
AX104777
LOCUS       AX104777                  20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 969 from Patent WO0122972.
ACCESSION   AX104777
VERSION     AX104777.1  GI:13920974
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M., Schetter,C. and Vollmer,J.C.
  TITLE     Immunostimulatory nucleic acids
  JOURNAL   Patent: WO 0122972-A 969 05-APR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US) ; Coley Pharmaceutical
            GmbH (DE)
FEATURES             Location/Qualifiers
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BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


  Query Match             100.0%;  Score 20;  DB 6;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   9
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LOCUS       AX105103                  20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 1 from Patent WO0122990.
ACCESSION   AX105103
VERSION     AX105103.1  GI:13921253
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Hartmann,G.D., Bratzler,R.L. and Krieg,A.U.
  TITLE     Methods related to immunostimulatory nucleic acid-induced
            interferon
  JOURNAL   Patent: WO 0122990-A 1 05-APR-2001;
            Coley Pharmaceutical Group, Inc. (US) ; UNIVERSITY OF IOWA RESEARCH
            FOUNDATION (US)
FEATURES             Location/Qualifiers
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                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
                     /note="Synthetic Oligonucleotide"
     misc_feature    1. .2
                     /note="Backbone has phosphorothioate linkages."
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BASE COUNT        3 a      2 c     12 g      3 t
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          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT  10
AX105236
LOCUS       AX105236                  20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 135 from Patent WO0122990.
ACCESSION   AX105236
VERSION     AX105236.1  GI:13921386
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Hartmann,G.D., Bratzler,R.L. and Krieg,A.U.
  TITLE     Methods related to immunostimulatory nucleic acid-induced
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  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   2
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LOCUS       AR154761                  20 bp    DNA     linear   PAT 08-AUG-2001
DEFINITION  Sequence 90 from patent US 6239116.
ACCESSION   AR154761
VERSION     AR154761.1  GI:15122814
KEYWORDS    .
SOURCE      Unknown.
  ORGANISM  Unknown.
            Unclassified.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M. and Kline,J.N.
  TITLE     Immunostimulatory nucleic acid molecules
  JOURNAL   Patent: US 6239116-A 90 29-MAY-2001;
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="unknown"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


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  Best Local Similarity  100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   3
AX063578
LOCUS       AX063578                  20 bp    DNA     linear   PAT 24-JAN-2001
DEFINITION  Sequence 4 from Patent WO0100231.
ACCESSION   AX063578
VERSION     AX063578.1  GI:12541302
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Cohen,J., Garcon,N. and Voss,G.
  TITLE     Vaccines
  JOURNAL   Patent: WO 0100231-A 4 04-JAN-2001;
            SMITHKLINE BEECHAM BIOLOGICALS S.A. (BE)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
                     /note="oligonucleotide-nucleotides 1,2,15,16,17,18 and 19
                     have linkages with a thioate modification"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


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  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   4
AX088932
LOCUS       AX088932                  20 bp    DNA     linear   PAT 17-MAR-2001
DEFINITION  Sequence 4 from Patent WO0100232.
ACCESSION   AX088932
VERSION     AX088932.1  GI:13397690
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Garcon,N. and Voss,G.
  TITLE     Vaccine
  JOURNAL   Patent: WO 0100232-A 4 04-JAN-2001;
            SmithKline Beecham Biologics SA (BE)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
                     /note="CpG containing oligonucleotide"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


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  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   5
AX104327
LOCUS       AX104327                  20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 519 from Patent WO0122972.
ACCESSION   AX104327
VERSION     AX104327.1  GI:13920524
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M., Schetter,C. and Vollmer,J.C.
  TITLE     Immunostimulatory nucleic acids
  JOURNAL   Patent: WO 0122972-A 519 05-APR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US) ; Coley Pharmaceutical
            GmbH (DE)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


  Query Match           100.0%;  Score 20;  DB 6;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   6
AX104575
LOCUS       AX104575                  20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 767 from Patent WO0122972.
ACCESSION   AX104575
VERSION     AX104575.1  GI:13920772
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
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GenCore version 4.5

OM nucleic - nucleic search, using sw model

Run on: June 6, 2002, 00:12:13 ; Search time 1867.08 Seconds
(without alignments)
224.163 Million cell updates/sec

Title: US-09-655-319-12
Perfect score: 20
Sequence: 1 ggggtcaacgttgagggggg 20

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 1797656 seqs, 10463268293 residues

Total number of hits satisfying chosen parameters: 759944

Minimum DB seq length: 0
Maximum DB seq length: 60

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : GenEmbl:*
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2: gb_htg:*
3: gb_in:*
4: gb_om:*
5: gb_ov:*
6: gb_pat:*
7: gb_ph:*
8: gb_pl:*
9: gb_pr:*
10: gb_ro:*
11: gb_sts:*
12: gb_sy:*
13: gb_un:*
14: gb_vi:*
15: em_ba:*
16: em_fun:*
17: em_hum:*
18: em_in:*
19: em_mu:*
20: em_om:*
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27: em_sts:*
28: em_un:*
29: em_vi:*
30: em_htg_hum:*
31: em_htg_inv:*
32: em_htg_other:*
33: em_htgo_inv:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query % Match	Length	DB	ID	Description
1	20	100.0	20	6	AR140453	AR140453 Sequence
2	20	100.0	20	6	AR154761	AR154761 Sequence
3	20	100.0	20	6	AX063578	AX063578 Sequence
4	20	100.0	20	6	AX088932	AX088932 Sequence
5	20	100.0	20	6	AX104327	AX104327 Sequence
6	20	100.0	20	6	AX104575	AX104575 Sequence
7	20	100.0	20	6	AX104776	AX104776 Sequence
8	20	100.0	20	6	AX104777	AX104777 Sequence
9	20	100.0	20	6	AX105103	AX105103 Sequence
10	20	100.0	20	6	AX105236	AX105236 Sequence
11	20	100.0	20	6	AX135634	AX135634 Sequence
12	20	100.0	20	6	AX194489	AX194489 Sequence
13	20	100.0	20	6	AX355408	AX355408 Sequence
14	20	100.0	20	6	AX355409	AX355409 Sequence
15	20	100.0	20	6	BD009060	BD009060 Immunosti
16	20	100.0	21	6	AX104812	AX104812 Sequence
17	20	100.0	21	6	AX105257	AX105257 Sequence
18	20	100.0	24	6	AX104326	AX104326 Sequence
19	19	95.0	19	6	AX194446	AX194446 Sequence
20	18.4	92.0	20	6	AR096686	AR096686 Sequence
21	18.4	92.0	20	6	AR135030	AR135030 Sequence
22	18.4	92.0	20	6	AX342378	AX342378 Sequence
23	18.4	92.0	20	6	AX342405	AX342405 Sequence
24	18.4	92.0	20	6	AX342438	AX342438 Sequence
25	17.4	87.0	19	6	AR146340	AR146340 Sequence
26	17.4	87.0	19	6	AR154683	AR154683 Sequence
27	17.4	87.0	19	6	AX105169	AX105169 Sequence
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29	16.8	84.0	20	6	AX104167	AX104167 Sequence
30	16.8	84.0	20	6	AX104717	AX104717 Sequence
31	16.8	84.0	20	6	AX104778	AX104778 Sequence
32	16.8	84.0	20	6	AX104787	AX104787 Sequence
33	16.8	84.0	20	6	AX104851	AX104851 Sequence
34	16.8	84.0	20	6	AX105107	AX105107 Sequence
35	16.8	84.0	20	6	AX105108	AX105108 Sequence
36	16.8	84.0	20	6	AX105126	AX105126 Sequence
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38	16.8	84.0	20	6	AX105252	AX105252 Sequence
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43	16.8	84.0	21	6	AX104755	AX104755 Sequence
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ALIGNMENTS

RESULT 1
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LOCUS AR140453 20 bp DNA linear PAT 16-JUN-2001
DEFINITION Sequence 12 from patent US 6207646.
ACCESSION AR140453
VERSION AR140453.1 GI:14482949
KEYWORDS .
SOURCE Unknown.
ORGANISM Unknown.
Unclassified.
REFERENCE 1 (bases 1 to 20)
AUTHORS Krieg,A.M., Kline,J., Klinman,D. and Steinberg,A.D.
TITLE Immunostimulatory nucleic acid molecules
JOURNAL Patent: US 6207646-A 12 27-MAR-2001;
FEATURES Location/Qualifiers
source 1. .20
/organism="unknown"
BASE COUNT 3 a 2 c 12 g 3 t
ORIGIN

Query Match 100.0%; Score 20; DB 6; Length 20;
Best Local Similarity 100.0%; Pred. No. 17;

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;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  634 base pairs
;      TYPE:  Nucleic Acid
;      STRANDEDNESS:  Single
;      TOPOLOGY:  Linear
US-08-424-826A-1


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  Best Local Similarity  85.0%;  Pred. No. 60;
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Qy      1 ggggtcaacgttgaggggggg 20
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Db     98 GGGGGCAATGTTGAGGGTGG 79


RESULT  15
US-08-928-694-1/c
; Sequence 1, Application US/08928694
; Patent No. 6037320
;  GENERAL INFORMATION:
;    APPLICANT:  ROSENTHAL, ARNON
;    TITLE OF INVENTION:  NOVEL NEUROTROPHIC FACTOR
;    NUMBER OF SEQUENCES:  100
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Genentech, Inc.
;      STREET:  1 DNA Way
;      CITY:  South San Francisco
;      STATE:  California
;      COUNTRY:  USA
;      ZIP:  94080
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  3.5 inch, 1.44 Mb floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  WinPatin (Genentech)
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/928,694
;      FILING DATE:  12-Sep-1997
;      CLASSIFICATION:  424
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  08/451947
;      FILING DATE:  26-MAY-1995
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  08/426419
;      FILING DATE:  19-APR-1995
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  08/030013
;      FILING DATE:  22-MAR-1993
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  07/648482
;      FILING DATE:  31-JAN
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  07/587707
;      FILING DATE:  1991
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Torchia, PhD., Timothy E.
;      REGISTRATION NUMBER:  36,700
;      REFERENCE/DOCKET NUMBER:  P0666P2C1D2C1
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650/225-8674
;      TELEFAX:  650/952-9881
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  634 base pairs
;      TYPE:  Nucleic Acid
;      STRANDEDNESS:  Single
;      TOPOLOGY:  Linear
US-08-928-694-1


  Query Match            76.0%;  Score 15.2;  DB 3;  Length 634;
  Best Local Similarity  85.0%;  Pred. No. 60;
  Matches   17;  Conservative    0;  Mismatches    3;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
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Job time:  6742 sec
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;     NUMBER OF SEQUENCES: 27
;     CORRESPONDENCE ADDRESS:
;       ADDRESSEE:  LAHIVE & COCKFIELD
;       STREET:  60 STATE STREET, SUITE 510
;       CITY:  BOSTON
;       STATE:  MASSACHUSETTS
;       COUNTRY:  USA
;       ZIP:  02109-1875
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  Floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  ASCII text
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/386,063
;       FILING DATE:
;       CLASSIFICATION:
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  ARNOLD, BETH E.
;       REGISTRATION NUMBER:  35,430
;       REFERENCE/DOCKET NUMBER:  UIZ-013CP
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  (617)227-7400
;       TELEFAX:  (617)227-5941
;   INFORMATION FOR SEQ ID NO:  27:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  20 base pairs
;       TYPE:  nucleic acid
;       STRANDEDNESS:  single
;       TOPOLOGY:  linear
;     MOLECULE TYPE:  DNA
US-08-386-063-27


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  Best Local Similarity   85.0%;  Pred. No. 47;
  Matches   17;  Conservative    0;  Mismatches    3;  Indels    0;  Gaps    0;

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RESULT  13
US-08-451-947-1/c
; Sequence 1, Application US/08451947
; Patent No. 5702906
;  GENERAL INFORMATION:
;     APPLICANT:  GENENTECH, INC.
;     APPLICANT:  ROSENTHAL, ARNON
;     TITLE OF INVENTION:  NOVEL NEUROTROPHIC FACTOR
;     NUMBER OF SEQUENCES:  100
;     CORRESPONDENCE ADDRESS:
;       ADDRESSEE:  Genentech, Inc.
;       STREET:  460 Point San Bruno Blvd
;       CITY:  South San Francisco
;       STATE:  California
;       COUNTRY:  USA
;       ZIP:  94080
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  5.25 inch, 360 Kb floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  patin (Genentech)
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/451,947
;       FILING DATE:
;       CLASSIFICATION:  514
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  08/426419
;       FILING DATE:  19-APR-1995
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  08/030013
;       FILING DATE:  22-MAR-1993
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  07/648482
;       FILING DATE:  31-JAN
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  07/587707
;       FILING DATE:  1991
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Torchia, Timothy E.
;       REGISTRATION NUMBER:  36,700
;       REFERENCE/DOCKET NUMBER:  666P2C1D2
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  415/225-8674
;       TELEFAX:  415/952-9881
;       TELEX:  910/371-7168
;   INFORMATION FOR SEQ ID NO:  1:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  634 bases
;       TYPE:  nucleic acid
;       STRANDEDNESS:  single
;       TOPOLOGY:  linear
US-08-451-947-1


  Query Match             76.0%;  Score 15.2;  DB 1;  Length 634;
  Best Local Similarity   85.0%;  Pred. No. 60;
  Matches   17;  Conservative    0;  Mismatches    3;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgagggggg 20
          ||||  |||  |||||||| ||
Db     98 GGGGGCAATGTTGAGGGTGG 79


RESULT  14
US-08-424-826A-1/c
; Sequence 1, Application US/08424826A
; Patent No. 5830858
;  GENERAL INFORMATION:
;     APPLICANT:  Rosenthal, Arnon
;     TITLE OF INVENTION:  NOVEL NEUROTROPHIC FACTOR
;     NUMBER OF SEQUENCES:  98
;     CORRESPONDENCE ADDRESS:
;       ADDRESSEE:  Genentech, Inc.
;       STREET:  460 Point San Bruno Blvd
;       CITY:  South San Francisco
;       STATE:  California
;       COUNTRY:  USA
;       ZIP:  94080
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  3.5 inch, 1.44 Mb floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  WinPatin (Genentech)
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/424,826A
;       FILING DATE:  19-Apr-1995
;       CLASSIFICATION:  514
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  08/240387
;       FILING DATE:  10-May-1994
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  07/648482
;       FILING DATE:  31-JAN-1991
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  07/587707
;       FILING DATE:  25-SEP-1990
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Torchia, PhD., Timothy E.
;       REGISTRATION NUMBER:  36,700
;       REFERENCE/DOCKET NUMBER:  P0666P1C2
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  415/225-8674
;       TELEFAX:  415/952-9881
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RESULT  9
US-09-286-098-52
; Sequence 52, Application US/09286098
; Patent No. 6218371
; GENERAL INFORMATION:
;  APPLICANT: Krieg, Arthur M.
;  APPLICANT: Weiner, George
;  TITLE OF INVENTION: Methods and Products for Stimulating the
;  TITLE OF INVENTION: Immune System Using Immunotherapeutic Oligonucleotides and
;  TITLE OF INVENTION: Cytokines
;  FILE REFERENCE: C1039/7026/HCL
;  CURRENT APPLICATION NUMBER: US/09/286,098
;  CURRENT FILING DATE: 1999-04-02
;  EARLIER APPLICATION NUMBER: US 60/080,729
;  EARLIER FILING DATE: 1998-04-03
;  NUMBER OF SEQ ID NOS: 105
;  SOFTWARE: FastSEQ for Windows Version 3.0
; SEQ ID NO 52
;   LENGTH: 19
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: Synthetic  Sequence
US-09-286-098-52


  Query Match             87.0%;  Score 17.4;  DB 4;  Length 19;
  Best Local Similarity   94.7%;  Pred. No. 4;
  Matches   18;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 19
          ||||||||||||||| ||||
Db      1 ggggtcaacgttgacgggg 19


RESULT  10
US-08-960-774-12
; Sequence 12, Application US/08960774
; Patent No. 6239116
; GENERAL INFORMATION:
;   APPLICANT:  Krieg et al.,
;   TITLE OF INVENTION:  IMMUNOSTIMULATORY NUCLEIC ACID MOLECULES
;   NUMBER OF SEQUENCES:  111
;   CORRESPONDENCE ADDRESS:
;     ADDRESSEE:  Fish & Richardson P.C.
;     STREET:  4225 Executive Square, Suite 1400
;     CITY:  La Jolla
;     STATE:  CA
;     COUNTRY:  USA
;     ZIP:  92037
;   COMPUTER READABLE FORM:
;     MEDIUM TYPE:  Floppy disk
;     COMPUTER:  IBM PC compatible
;     OPERATING SYSTEM:  PC-DOS/MS-DOS
;     SOFTWARE:  ASCII text
;   CURRENT APPLICATION DATA:
;     APPLICATION NUMBER:  US/08/960,774
;     FILING DATE:  30-October-1997
;     CLASSIFICATION:  514
;   PRIOR APPLICATION DATA:
;     APPLICATION NUMBER:  U.S. Serial No. 6239116  08/738,652
;     FILING DATE:  October 30, 1996
;     CLASSIFICATION:  514
;   ATTORNEY/AGENT INFORMATION:
;     NAME:  Haile, Lisa A.
;     REGISTRATION NUMBER:  38,347
;     REFERENCE/DOCKET NUMBER:  08918/012001
;   TELECOMMUNICATION INFORMATION:
;     TELEPHONE:  619/678-5070
;     TELEFAX:  619/678-5099
;  INFORMATION FOR SEQ ID NO:  12:
;   SEQUENCE CHARACTERISTICS:
;     LENGTH:  19 base pairs
;     TYPE:  nucleic acid
;     STRANDEDNESS:  single
;     TOPOLOGY:  linear
;   MOLECULE TYPE:  DNA
US-08-960-774-12


  Query Match             87.0%;  Score 17.4;  DB 4;  Length 19;
  Best Local Similarity   94.7%;  Pred. No. 4;
  Matches   18;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 19
          ||||||||||||||| ||||
Db      1 GGGGTCAACGTTGACGGGG 19


RESULT  11
US-08-386-063-27
; Sequence 27, Application US/08386063
; Patent No. 6008200
; GENERAL INFORMATION:
;   APPLICANT:  Arthur M. Krieg, M.D.
;   TITLE OF INVENTION:  IMMUNOMODULATORY OLIGONUCLEOTIDES
;   NUMBER OF SEQUENCES:  27
;   CORRESPONDENCE ADDRESS:
;     ADDRESSEE:  LAHIVE & COCKFIELD
;     STREET:  60 STATE STREET, SUITE 510
;     CITY:  BOSTON
;     STATE:  MASSACHUSETTS
;     COUNTRY:  USA
;     ZIP:  02109-1875
;   COMPUTER READABLE FORM:
;     MEDIUM TYPE:  Floppy disk
;     COMPUTER:  IBM PC compatible
;     OPERATING SYSTEM:  PC-DOS/MS-DOS
;     SOFTWARE:  ASCII text -
;   CURRENT APPLICATION DATA:
;     APPLICATION NUMBER:  US/08/386,063
;     FILING DATE:
;     CLASSIFICATION:  424
;   ATTORNEY/AGENT INFORMATION:
;     NAME:  ARNOLD, BETH E.
;     REGISTRATION NUMBER:  35,430
;     REFERENCE/DOCKET NUMBER:  UIZ-013CP
;   TELECOMMUNICATION INFORMATION:
;     TELEPHONE:  (617)227-7400
;     TELEFAX:  (617)227-5941
;  INFORMATION FOR SEQ ID NO:  27:
;   SEQUENCE CHARACTERISTICS:
;     LENGTH:  20 base pairs
;     TYPE:  nucleic acid
;     STRANDEDNESS:  single
;     TOPOLOGY:  linear
;   MOLECULE TYPE:  DNA
US-08-386-063-27


  Query Match             76.0%;  Score 15.2;  DB 3;  Length 20;
  Best Local Similarity   85.0%;  Pred. No. 47;
  Matches   17;  Conservative    0;  Mismatches    3;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||   |||||||||
Db      1 GGGGTCAAGTCTGAGGGGGG 20


RESULT  12
US-08-386-063-27
; Sequence 27, Application US/08386063
; Patent No. 6194388
; GENERAL INFORMATION:
;   APPLICANT:  Arthur M. Krieg, M.D.
;   TITLE OF INVENTION:  IMMUNOMODULATORY OLIGONUCLEOTIDES
```

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  Query Match          100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggg 20


RESULT   6
US-08-386-063-1
; Sequence 1, Application US/08386063
; Patent No. 6008200
;  GENERAL INFORMATION:
;    APPLICANT:  Arthur M. Krieg, M.D.
;    TITLE OF INVENTION:  IMMUNOMODULATORY OLIGONUCLEOTIDES
;    NUMBER OF SEQUENCES:  27
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  LAHIVE & COCKFIELD
;      STREET:  60 STATE STREET, SUITE 510
;      CITY:  BOSTON
;      STATE:  MASSACHUSETTS
;      COUNTRY:  USA
;      ZIP:  02109-1875
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  ASCII text
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/386,063
;      FILING DATE:
;      CLASSIFICATION:  424
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ARNOLD, BETH E.
;      REGISTRATION NUMBER:  35,430
;      REFERENCE/DOCKET NUMBER:  UIZ-013CP
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (617)227-7400
;      TELEFAX:  (617)227-5941
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  20 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  DNA
US-08-386-063-1


  Query Match          92.0%;  Score 18.4;  DB 3;  Length 20;
  Best Local Similarity  95.0%;  Pred. No. 1.3;
  Matches   19;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 20
          |||||||||||| |||||||
Db      1 GGGGTCAACGTTCAGGGGG 20


RESULT   7
US-08-386-063-1
; Sequence 1, Application US/08386063
; Patent No. 6194388
;  GENERAL INFORMATION:
;    APPLICANT:  Arthur M. Krieg, M.D.
;    TITLE OF INVENTION:  IMMUNOMODULATORY OLIGONUCLEOTIDES
;    NUMBER OF SEQUENCES:  27
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  LAHIVE & COCKFIELD
;      STREET:  60 STATE STREET, SUITE 510
;      CITY:  BOSTON
;      STATE:  MASSACHUSETTS
;      COUNTRY:  USA
;      ZIP:  02109-1875
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  ASCII text
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/386,063
;      FILING DATE:
;      CLASSIFICATION:
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ARNOLD, BETH E.
;      REGISTRATION NUMBER:  35,430
;      REFERENCE/DOCKET NUMBER:  UIZ-013CP
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (617)227-7400
;      TELEFAX:  (617)227-5941
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  20 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  DNA
US-08-386-063-1


  Query Match          92.0%;  Score 18.4;  DB 4;  Length 20;
  Best Local Similarity  95.0%;  Pred. No. 1.3;
  Matches   19;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 20
          |||||||||||| |||||||
Db      1 GGGGTCAACGTTCAGGGGG 20


RESULT   8
US-09-030-701-21
; Sequence 21, Application US/09030701B
; Patent No. 6214806
; GENERAL INFORMATION:
;  APPLICANT:  Krieg, Arthur M.
;  APPLICANT:  Schwartz, David A.
;  TITLE OF INVENTION:  USE OF NUCLEIC ACIDS CONTAINING
;  TITLE OF INVENTION:  UNMETHYLATED CpG DINUCLEOTIDE IN THE TREATMENT OF
;  TITLE OF INVENTION:  LPS-ASSOCIATED DISORDERS
;  FILE REFERENCE:  C1039/7011
;  CURRENT APPLICATION NUMBER: US/09/030,701B
;  CURRENT FILING DATE:  1998-02-25
;  PRIOR APPLICATION NUMBER:  60/039,405
;  PRIOR FILING DATE:  1997-02-28
;  NUMBER OF SEQ ID NOS:  65
;  SOFTWARE:  FastSEQ for Windows Version 3.0
; SEQ ID NO 21
;   LENGTH: 19
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: synthetic oligonucleotide
US-09-030-701-21


  Query Match          87.0%;  Score 17.4;  DB 4;  Length 19;
  Best Local Similarity  94.7%;  Pred. No. 4;
  Matches   18;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 19
          |||||||||||||| ||||
Db      1 ggggtcaacgttgacgggg 19
```

```
;  SOFTWARE:  FastSEQ for Windows Version 3.0
; SEQ ID NO 63
;   LENGTH: 20
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: synthetic oligonucleotide
US-09-030-701-63


  Query Match             100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT   3
US-08-960-774-90
; Sequence 90, Application US/08960774
; Patent No. 6239116
;  GENERAL INFORMATION:
;    APPLICANT:  Krieg et al.,
;    TITLE OF INVENTION:  IMMUNOSTIMULATORY NUCLEIC ACID MOLECULES
;    NUMBER OF SEQUENCES:  111
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Fish & Richardson P.C.
;      STREET:  4225 Executive Square, Suite 1400
;      CITY:  La Jolla
;      STATE:  CA
;      COUNTRY:  USA
;      ZIP:  92037
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  ASCII text
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/960,774
;      FILING DATE:  30-October-1997
;      CLASSIFICATION:  514
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  U.S. Serial No. 6239116  08/738,652
;      FILING DATE:  October 30, 1996
;      CLASSIFICATION:  514
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Haile, Lisa A.
;      REGISTRATION NUMBER:  38,347
;      REFERENCE/DOCKET NUMBER:  08918/012001
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  619/678-5070
;      TELEFAX:  619/678-5099
;  INFORMATION FOR SEQ ID NO:  90:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  20 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  cDNA
US-08-960-774-90


  Query Match             100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   4
US-09-082-649B-52
; Sequence 52, Application US/09082649B
; Patent No. 6339068
; GENERAL INFORMATION:
;  APPLICANT:  Davis, Heather L.
;  APPLICANT:  Krieg, Arthur M.
;  APPLICANT:  Schorr, Joachim
;  APPLICANT:  Wu, Tong
;  TITLE OF INVENTION:  Vectors and Methods for Immunization or
;  TITLE OF INVENTION:  Therapeutic Protocols
;  FILE REFERENCE:  C1039/7009
;  CURRENT APPLICATION NUMBER: US/09/082,649B
;  CURRENT FILING DATE:  1998-05-20
;  PRIOR APPLICATION NUMBER:  US 60/047,233
;  PRIOR FILING DATE:  1997-05-20
;  PRIOR APPLICATION NUMBER:  US 60/047,209
;  PRIOR FILING DATE:  1997-05-20
;  NUMBER OF SEQ ID NOS:  85
;  SOFTWARE:  FastSEQ for Windows Version 3.0
; SEQ ID NO 52
;   LENGTH: 20
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: synthetic oligonucleotide
;   NAME/KEY: misc_feature
;   LOCATION: (0)...(0)
;   OTHER INFORMATION: Has a phosphorothioate backbone.
US-09-082-649B-52


  Query Match             100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT   5
US-09-082-649B-59
; Sequence 59, Application US/09082649B
; Patent No. 6339068
; GENERAL INFORMATION:
;  APPLICANT:  Davis, Heather L.
;  APPLICANT:  Krieg, Arthur M.
;  APPLICANT:  Schorr, Joachim
;  APPLICANT:  Wu, Tong
;  TITLE OF INVENTION:  Vectors and Methods for Immunization or
;  TITLE OF INVENTION:  Therapeutic Protocols
;  FILE REFERENCE:  C1039/7009
;  CURRENT APPLICATION NUMBER: US/09/082,649B
;  CURRENT FILING DATE:  1998-05-20
;  PRIOR APPLICATION NUMBER:  US 60/047,233
;  PRIOR FILING DATE:  1997-05-20
;  PRIOR APPLICATION NUMBER:  US 60/047,209
;  PRIOR FILING DATE:  1997-05-20
;  NUMBER OF SEQ ID NOS:  85
;  SOFTWARE:  FastSEQ for Windows Version 3.0
; SEQ ID NO 59
;   LENGTH: 20
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: synthetic oligonucleotide
;   NAME/KEY: misc_feature
;   LOCATION: (0)...(0)
;   OTHER INFORMATION: Has SOS-ODN backbone with two S-linkages at the 5'
;   OTHER INFORMATION: end, five S-linkages at the 3' end, and O-linkages
;   OTHER INFORMATION: in between.
US-09-082-649B-59
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GenCore version 4.5

OM nucleic - nucleic search, using sw model

Run on: June 5, 2002, 22:52:07 ; Search time 45.61 Seconds
(without alignments)
107.710 Million cell updates/sec

Title: US-09-655-319-12
Perfect score: 20
Sequence: 1 ggggtcaacgttgaggggggg 20

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 383533 seqs, 122816752 residues

Total number of hits satisfying chosen parameters: 767066

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued_Patents_NA:*
1: /cgn2_6/ptodata/1/ina/5A_COMB.seq:*
2: /cgn2_6/ptodata/1/ina/5B_COMB.seq:*
3: /cgn2_6/ptodata/1/ina/6A_COMB.seq:*
4: /cgn2_6/ptodata/1/ina/6B_COMB.seq:*
5: /cgn2_6/ptodata/1/ina/PCTUS_COMB.seq:*
6: /cgn2_6/ptodata/1/ina/backfiles1.seq:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

	Result No.	Score	% Query Match	Length	DB	ID	Description
	1	20	100.0	20	4	US-08-738-652-12	Sequence 12, Appl
	2	20	100.0	20	4	US-09-030-701-63	Sequence 63, Appl
	3	20	100.0	20	4	US-08-960-774-90	Sequence 90, Appl
	4	20	100.0	20	4	US-09-082-649B-52	Sequence 52, Appl
	5	20	100.0	20	4	US-09-082-649B-59	Sequence 59, Appl
	6	18.4	92.0	20	3	US-08-386-063-1	Sequence 1, Appli
	7	18.4	92.0	20	4	US-08-386-063-1	Sequence 1, Appli
	8	17.4	87.0	19	4	US-09-030-701-21	Sequence 21, Appl
	9	17.4	87.0	19	4	US-09-286-098-52	Sequence 52, Appl
	10	17.4	87.0	19	4	US-08-960-774-12	Sequence 12, Appl
	11	15.2	76.0	20	3	US-08-386-063-27	Sequence 27, Appl
	12	15.2	76.0	20	4	US-08-386-063-27	Sequence 27, Appl
c	13	15.2	76.0	634	1	US-08-451-947-1	Sequence 1, Appli
c	14	15.2	76.0	634	2	US-08-424-826A-1	Sequence 1, Appli
c	15	15.2	76.0	634	3	US-08-928-694-1	Sequence 1, Appli
c	16	15.2	76.0	634	5	PCT-US91-06950-1	Sequence 1, Appli
c	17	15.2	76.0	1404	1	US-07-796-106-22	Sequence 22, Appl
	18	15.2	76.0	3220	2	US-08-225-488-1	Sequence 1, Appli
c	19	15.2	76.0	11703	4	US-09-101-886B-3	Sequence 3, Appli
	20	14.8	74.0	259	3	US-08-581-148C-1	Sequence 1, Appli
	21	14.8	74.0	1138	3	US-08-581-148C-3	Sequence 3, Appli
c	22	14.8	74.0	1569	3	US-08-821-984-9	Sequence 9, Appli
c	23	14.8	74.0	1569	4	US-09-329-749-9	Sequence 9, Appli
c	24	14.8	74.0	1960	3	US-09-165-240-4	Sequence 4, Appli
c	25	14.8	74.0	1960	4	US-09-568-059-4	Sequence 4, Appli
	26	14.8	74.0	2294	3	US-08-964-700A-1	Sequence 1, Appli
	27	14.8	74.0	3435	1	US-08-366-577-1	Sequence 1, Appli
	28	14.8	74.0	3435	5	PCT-US96-00005-1	Sequence 1, Appli
c	29	14.8	74.0	4085	3	US-09-165-240-5	Sequence 5, Appli
c	30	14.8	74.0	4085	4	US-09-568-059-5	Sequence 5, Appli
	31	14.4	72.0	1225	2	US-08-829-110-4	Sequence 4, Appli
c	32	14.2	71.0	833	2	US-08-403-852D-3	Sequence 3, Appli
c	33	14.2	71.0	833	3	US-08-510-646B-3	Sequence 3, Appli
c	34	14.2	71.0	833	4	US-09-231-818-3	Sequence 3, Appli
	35	14.2	71.0	1642	2	US-08-665-037-1	Sequence 1, Appli
	36	14.2	71.0	1642	2	US-08-666-067-1	Sequence 1, Appli
	37	14.2	71.0	1642	2	US-08-732-870-1	Sequence 1, Appli
c	38	14.2	71.0	1683	2	US-08-824-405-5	Sequence 5, Appli
	39	14.2	71.0	1848	1	US-08-075-193-3	Sequence 3, Appli
	40	14.2	71.0	1848	2	US-08-564-090A-3	Sequence 3, Appli
	41	14.2	71.0	1848	5	PCT-US94-06698-3	Sequence 3, Appli
c	42	14.2	71.0	2594	3	US-08-989-385-2	Sequence 2, Appli
c	43	14.2	71.0	3132	2	US-08-224-482-3	Sequence 3, Appli
c	44	14.2	71.0	3132	3	US-09-205-921-1	Sequence 1, Appli
	45	14.2	71.0	4108	4	US-08-981-729-8	Sequence 8, Appli

ALIGNMENTS

RESULT 1
US-08-738-652-12
; Sequence 12, Application US/08738652B
; Patent No. 6207646
; GENERAL INFORMATION:
; APPLICANT: Krieg, Arthur M.
; TITLE OF INVENTION: Immunostimulatory Nucleic Acid Molecules
; FILE REFERENCE: C1039/7004 HCL
; CURRENT APPLICATION NUMBER: US/08/738,652B
; CURRENT FILING DATE: 1996-10-30
; EARLIER APPLICATION NUMBER: US 08/276,358
; EARLIER FILING DATE: 1994-07-15
; EARLIER APPLICATION NUMBER: US 08/386,063
; EARLIER FILING DATE: 1995-02-07
; NUMBER OF SEQ ID NOS: 55
; SOFTWARE: FastSEQ for Windows Version 3.0
; SEQ ID NO 12
; LENGTH: 20
; TYPE: DNA
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Synthetic oligonucleotide
US-08-738-652-12

Query Match 100.0%; Score 20; DB 4; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.22;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20
```

RESULT 2
US-09-030-701-63
; Sequence 63, Application US/09030701B
; Patent No. 6214806
; GENERAL INFORMATION:
; APPLICANT: Krieg, Arthur M.
; APPLICANT: Schwartz, David A.
; TITLE OF INVENTION: USE OF NUCLEIC ACIDS CONTAINING
; TITLE OF INVENTION: UNMETHYLATED CpG DINUCLEOTIDE IN THE TREATMENT OF
; TITLE OF INVENTION: LPS-ASSOCIATED DISORDERS
; FILE REFERENCE: C1039/7011
; CURRENT APPLICATION NUMBER: US/09/030,701B
; CURRENT FILING DATE: 1998-02-25
; PRIOR APPLICATION NUMBER: 60/039,405
; PRIOR FILING DATE: 1997-02-28
; NUMBER OF SEQ ID NOS: 65

DNA Sequencing by: Washington University Genome Sequencing Center
Clone distribution: NCI-CGAP clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: www-bio.llnl.gov/bbrp/image/image.html

Trace considered overall poor quality
Seq primer: -40UP from Gibco
High quality sequence stop: 1.

FEATURES Location/Qualifiers
source 1. .37
/organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="IMAGE:2005768"
/clone_lib="NCI_CGAP_Pan1"
/tissue_type="adenocarcinoma"
/lab_host="DH10B"
/note="Organ: pancreas; Vector: pCMV-SPORT6; Site_1: SalI; Site_2: NotI; Cloned unidirectionally. Primer: Oligo dT. Average insert size 1.72 kb. Life Technologies catalog #: 11548-013"

BASE COUNT 7 a 24 c 6 g 0 t
ORIGIN

Query Match 60.0%; Score 12; DB 9; Length 37;
Best Local Similarity 75.0%; Pred. No. 1.2e+05;
Matches 15; Conservative 0; Mismatches 5; Indels 0; Gaps 0;

```
Qy      1 ggggtcaacgttgaggggg 20
          |||| |  | ||| ||||||
Db     28 GGGGCCCCCTTTGGGGGGG 9
```

RESULT 15
AI801617/c
LOCUS AI801617 43 bp mRNA linear EST 14-DEC-1999
DEFINITION to91g08.x1 NCI_CGAP_Gas4 Homo sapiens cDNA clone IMAGE:2185694 3' similar to TR:Q04118 Q04118 SALIVARY PROLINE-RICH GLYCOPROTEIN G1 PRECURSOR. ;, mRNA sequence.
ACCESSION AI801617
VERSION AI801617.1 GI:5367089
KEYWORDS EST.
SOURCE human.
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE 1 (bases 1 to 43)
AUTHORS NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
TITLE National Cancer Institute, Cancer Genome Anatomy Project (CGAP), Tumor Gene Index
JOURNAL Unpublished (1997)
COMMENT Contact: Robert Strausberg, Ph.D.
Email: cgapbs-r@mail.nih.gov
Tissue Procurement: Christopher Moskaluk, M.D., Ph.D., Michael R. Emmert-Buck, M.D., Ph.D.
cDNA Library Preparation: Life Technologies, Inc.
cDNA Library Arrayed by: Greg Lennon, Ph.D.
DNA Sequencing by: Washington University Genome Sequencing Center
Clone distribution: NCI-CGAP clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: www-bio.llnl.gov/bbrp/image/image.html

Trace considered overall poor quality
Insert Length: 2395 Std Error: 0.00
Seq primer: -40UP from Gibco
High quality sequence stop: 1.

FEATURES Location/Qualifiers
source 1. .43
/organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="IMAGE:2185694"
/clone_lib="NCI_CGAP_Gas4"
/tissue_type="poorly differentiated adenocarcinoma with signet ring cell features"
/lab_host="DH10B"
/note="Organ: stomach; Vector: pCMV-SPORT6; Site_1: SalI; Site_2: NotI; Cloned unidirectionally. Primer: Oligo dT. Average insert size 1.69 kb. Life Technologies catalog #: 11549-011"

BASE COUNT 7 a 25 c 10 g 1 t
ORIGIN

Query Match 60.0%; Score 12; DB 9; Length 43;
Best Local Similarity 75.0%; Pred. No. 1.3e+05;
Matches 15; Conservative 0; Mismatches 5; Indels 0; Gaps 0;

```
Qy      1 ggggtcaacgttgaggggg 20
          ||||||   | || ||||||
Db     34 GGGGTCCCGGGTGCGGGGG 15
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Search completed: June 6, 2002, 01:15:31
Job time: 5523 sec

```
          melanogaster cDNA clone bs58d11 5', mRNA sequence.
ACCESSION   BE976974
VERSION     BE976974.1  GI:10606985
KEYWORDS    EST.
SOURCE      fruit fly.
  ORGANISM  Drosophila melanogaster
            Eukaryota; Metazoa; Arthropoda; Tracheata; Hexapoda; Insecta;
            Pterygota; Neoptera; Endopterygota; Diptera; Brachycera;
            Muscomorpha; Ephydroidea; Drosophilidae; Drosophila.
REFERENCE   1  (bases 1 to 57)
  AUTHORS   Andrews, J., Bouffard, G. and Oliver, B.
  TITLE     Drosophila melanogaster testis expressed sequence tags
  JOURNAL   Unpublished (1999)
COMMENT     Contact: Brian Oliver
            Laboratory of Cellular and Developmental Biology
            NIDDK, National Institutes of Health
            6 Center Drive MSC 2715, Bldg 6, Rm B1-13, Bethesda, MD 20892 USA
            Fax: (301) 496 5239
            Email: oliver@helix.nih.gov,
            http://www.niddk.nih.gov/intram/people/boliver.htm
            Tissue isolation and library construction performed at the National
            Institute of Diabetes and Digestive and Kidney Diseases, NIH (see
            http://www.niddk.nih.gov/intram/people/boliver.htm). DNA sequencing
            and analyses performed by National Institutes of Health Intramural
            Sequencing Center (NISC; see http://www.nisc.nih.gov).
            Plate: 58  row: d  column: 11
            Seq primer: M13RP1 reverse primer (ABI).
FEATURES             Location/Qualifiers
     source          1. .57
                     /organism="Drosophila melanogaster"
                     /strain="y[*] w[67c1]/Y"
                     /db_xref="taxon:7227"
                     /clone="bs58d11".
                     /clone_lib="Drosophila melanogaster adult testis library"
                     /sex="male"
                     /dev_stage="1-5 day adult"
                     /lab_host="SOLR (Stratagene)"
                     /note="Organ: testis; Vector: pBlueScript SK (Stratagene);
                     Site_1: EcoR I; Site_2: Xho I; Testes dissected from 1-5
                     day adult y[*] w[67c1]/Y males raised at 25oC.  RNA
                     isolated using Trizol (Life Technologies) and a single
                     round of Poly(A)+ selection using Oligotex (Qiagen).  cDNA
                     library constructed using Stratagene ZAP-cDNA syntesis
                     kit.  Oligo dT-primed, size fractionated ~1-6 kb, and
                     directionally cloned at EcoRI and XhoI in Uni-ZAP XR.
                     Following a single round of amplification pBlueScript SK
                     phagemids were mass excised.  A distribution channel for
                     clones is being sought, but not currently available.
                     Requests for clones cannot be honored."
BASE COUNT       13 a     16 c     14 g     14 t
ORIGIN
```

```
  Query Match           61.0%;  Score 12.2;  DB 10;  Length 57;
  Best Local Similarity  82.4%;  Pred. No. 1.1e+05;
  Matches   14;  Conservative    0;  Mismatches    3;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgaggg 17
           ||||||| || | ||||
Db      29 GGGGTCATCGGTCAGGG 13
```

```
RESULT  13
AI460125
LOCUS       AI460125                 31 bp    mRNA    linear   EST 09-MAR-1999
DEFINITION  ar79b03.x1 Barstead colon HPLRB7 Homo sapiens cDNA clone
            IMAGE:2151437 3' similar to SW:ANX7_BOVIN P20072 ANNEXIN VII
            ;contains element TAR1 repetitive element ;, mRNA sequence.
ACCESSION   AI460125
VERSION     AI460125.1  GI:4313006
KEYWORDS    EST.
SOURCE      human.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 31)
  AUTHORS   Hillier,L., Allen,M., Bowles,L., Dubuque,T., Geisel,G., Jost,S.,
            Krizman,D., Kucaba,T., Lacy,M., Le,N., Lennon,G., Marra,M., Martin
            ,J., Moore,B., Schellenberg,K., Steptoe,M., Tan,F., Theising,B.,
            White,Y., Wylie,T., Waterston,R. and Wilson,R.
  TITLE     WashU-NCI human EST Project
  JOURNAL   Unpublished (1997)
COMMENT     Contact: Wilson RK
            Washington University School of Medicine
            4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108
            Tel: 314 286 1800
            Fax: 314 286 1810
            Email: est@watson.wustl.edu
            This clone is available royalty-free through LLNL ; contact the
            IMAGE Consortium (info@image.llnl.gov) for further information.
            Trace considered overall poor quality
            Possible reversed clone: similarity on wrong strand
            Seq primer: -40UP from Gibco
            High quality sequence stop: 1.
FEATURES             Location/Qualifiers
     source          1. .31
                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
                     /clone="IMAGE:2151437"
                     /clone_lib="Barstead colon HPLRB7"
                     /sex="male"
                     /dev_stage="adult, age 25"
                     /lab_host="DH10B (phage resistant)"
                     /note="Organ: colon; Vector: pT7T3D-Pac (Pharmacia) with a
                     modified polylinker; Site_1: EcoRI; Site_2: NotI; 1st
                     strand cDNA was primed with a Not I - oligo(dT) primer [5'
                     TGTTACGAATCTGAAGTGGGAGCGGCCGCCCTTTTTTTTTTTTTTTTTTTTTTT
                     3']; double-stranded cDNA was ligated to Eco RI adaptors
                     [5' AATTCACTAGTAAT 3' and 5' ATTACTAGTG 3'], digested
                     with Not I and cloned into the Not I and Eco RI sites of
                     the modified pT7T3 vector. Library constructed by Bob
                     Barstead."
BASE COUNT       6 a      8 c     17 g      0 t
ORIGIN
```

```
  Query Match           60.0%;  Score 12;  DB 9;  Length 31;
  Best Local Similarity  75.0%;  Pred. No. 1.2e+05;
  Matches   15;  Conservative    0;  Mismatches    5;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgaggggg 20
           ||||  |||   ||||||||
Db       6 GGGGGAAACCCGGAGGGGG 25
```

```
RESULT  14
AI358661/c
LOCUS       AI358661                 37 bp    mRNA    linear   EST 06-JAN-1999
DEFINITION  qx60e09.x1 NCI_CGAP_Pan1 Homo sapiens cDNA clone IMAGE:2005768 3'
            similar to TR:Q61869 Q61869 KERATIN COMPLEX 2, BASIC, PROTEIN 2 ;,
            mRNA sequence.
ACCESSION   AI358661
VERSION     AI358661.1  GI:4110282
KEYWORDS    EST.
SOURCE      human.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 37)
  AUTHORS   NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
  TITLE     National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
            Tumor Gene Index
  JOURNAL   Unpublished (1997)
COMMENT     Contact: Robert Strausberg, Ph.D.
            Email: cgapbs-r@mail.nih.gov
            Life Technologies catalog #: 11548-013
```

```
            Plate: 0028  row: E  column: 02
            Seq primer: CGTTGTAAAACGACGGCCAGT
            Class: plasmid ends
            High quality sequence stop: 39.
FEATURES             Location/Qualifiers
     source          1. .39
                     /organism="Mus musculus"
                     /strain="C57BL/6J"
                     /db_xref="taxon:10090"
                     /clone="UUGC2M0028E02"
                     /clone_lib="Mouse 10kb plasmid UUGC1M library"
                     /sex="Male"
                     /lab_host="E. Coli strain XL10-Gold, T1-resistant, F-"
                     /note="Vector: PWD42nv; Purified genomic DNA from M.
                     musculus C57BL/6J (male) was obtained  from the Jackson
                     Laboratory Mouse DNA Resource
                     (http://www.jax.org/resources/documents/dnares/). The DNA
                     was hydrodynamically sheared by repeated passage through a
                     0.005 inch orifice at constant velocity. The sheared DNA
                     was blunt end-repaired with T4 DNA polymerase and T4
                     polynucleotide kinase. Adaptor oligonucleotides were
                     ligated to the blunt ends in high  molar excess. The
                     adaptored DNA was purified and size-selected for a 9.5 to
                     10.5 kb range using preparative agarose gel
                     electrophoresis. Vector DNA was prepared from a derivative
                     of pWD42 (gi|4732114|gb|AF129072.1), a copy-number
                     inducible derivative of plasmid R1. The vector was ligated
                     with adaptors complementary to the insert adaptors and
                     purified. The sheared, adaptored mouse DNA was annealed to
                     adaptored vector DNA, and transformed into
                     chemically-competent E. coli XL10-Gold (Stratagene) cells
                     and selected for ampicillin resistance."
BASE COUNT        6 a      13 c       9 g      11 t
ORIGIN


  Query Match             61.0%;  Score 12.2;  DB 12;  Length 39;
  Best Local Similarity   82.4%;  Pred. No. 1e+05;
  Matches   14;  Conservative    0;  Mismatches    3;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgaggg 17
           || ||||| ||| ||||
Db      20 GGAGTCAAAGTTCAGGG 4


RESULT  10
AU105933/c
LOCUS       AU105933                 50 bp    mRNA    linear   EST 30-AUG-2001
DEFINITION  AU105933 Sugano Homo sapiens cDNA library Homo sapiens cDNA clone
            HRC01766, mRNA sequence.
ACCESSION   AU105933
VERSION     AU105933.1  GI:13555454
KEYWORDS    EST.
SOURCE      human.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 50)
  AUTHORS   Suzuki,Y., Taira,H., Tsunoda,T., Mizushima-Sugano,J., Sese,J., Hata
            ,H., Ota,T., Isogai,T., Tanaka,T., Morishita,S., Okubo,K., Sakaki
            ,Y., Nakamura,Y., Suyama,A. and Sugano,S.
  TITLE     Diverse transcriptional initiation revealed by fine, large-scale
            mapping of mRNA start sites
  JOURNAL   EMBO Rep. 2 (5), 388-393 (2001)
  MEDLINE   21270072
COMMENT     Contact: Yutaka Suzuki
            Department of Virology
            Institute of Medical Science, University of Tokyo
            4-6-1, Shirokanedai, Minatoku, Tokyo 108-8639, Japan
            Email: ysuzuki@ims.u-tokyo.ac.jp
            Suzuki,Y., Yoshitomo-Nakagawa,K., Maruyama,K., Suyama,A. and Sugano
            ,S. Construction and characterization of a full length-enriched and
            a 5'-end-enriched cDNA library. Gene 200 (1-2), 149-156 (1997).
FEATURES             Location/Qualifiers
     source          1. .50
                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
                     /clone="HRC01766"
                     /clone_lib="Sugano Homo sapiens cDNA library"
BASE COUNT        9 a      20 c      14 g       7 t
ORIGIN


  Query Match             61.0%;  Score 12.2;  DB 9;  Length 50;
  Best Local Similarity   82.4%;  Pred. No. 1.1e+05;
  Matches   14;  Conservative    0;  Mismatches    3;  Indels    0;  Gaps    0;

Qy       4 gtcaacgttgaggggg 20
           | |||||| | ||||||
Db      21 GCCAACGTGGGGGGGG 5


RESULT  11
AV833695/c
LOCUS       AV833695                 53 bp    mRNA    linear   EST 22-JUN-2001
DEFINITION  AV833695 K. Sato unpublished cDNA library: Hordeum vulgare subsp.
            vulgare shoots germination Hordeum vulgare subsp. vulgare cDNA
            clone bags12c02, mRNA sequence.
ACCESSION   AV833695
VERSION     AV833695.1  GI:14525784
KEYWORDS    EST.
SOURCE      Hordeum vulgare subsp. vulgare.
  ORGANISM  Hordeum vulgare subsp. vulgare
            Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
            Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Pooideae
            ; Triticeae; Hordeum.
REFERENCE   1  (bases 1 to 53)
  AUTHORS   Sato,K.
  TITLE     Barley EST sequencing project in NIG and Okayama Univ
  JOURNAL   Unpublished (2001)
COMMENT     Contact: Kazuhiro Sato
            Research Institute for Bioresources
            Okayama University, Barley Germplasm Center
            Chuo 2-20-1, Kurashiki, Okayama 710-0046, Japan
            Email: kazsato@rib.okayama-u.ac.jp,
            URL:http://www.rib.okayama-u.ac.jp/barley/
            Sato,K., Saisho,D., Takeda,K., Shini,T. and Kohara,Y. Direct
            submission;
            database:http://www.shigen.nig.ac.jp/barley/Barley.html.
FEATURES             Location/Qualifiers
     source          1. .53
                     /organism="Hordeum vulgare subsp. vulgare"
                     /cultivar="Haruna Nijo"
                     /db_xref="taxon:112509"
                     /clone="bags12c02"
                     /clone_lib="K. Sato unpublished cDNA library: Hordeum
                     vulgare subsp. vulgare shoots germination"
                     /tissue_type="shoots"
                     /dev_stage="germination"
BASE COUNT        5 a      23 c      13 g      10 t       2 others
ORIGIN


  Query Match             61.0%;  Score 12.2;  DB 9;  Length 53;
  Best Local Similarity   73.7%;  Pred. No. 1.1e+05;
  Matches   14;  Conservative    0;  Mismatches    5;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgaggggg 19
           ||||||  ||  ||| |||
Db      35 GGGGTCNNCGGAGAGCGGG 17


RESULT  12
BE976974/c
LOCUS       BE976974                 57 bp    mRNA    linear   EST 04-OCT-2000
DEFINITION  bs58d11.y1 Drosophila melanogaster adult testis library Drosophila
```

```
AI536838/c
LOCUS       AI536838                 52 bp    mRNA    linear   EST 12-MAY-1999
DEFINITION  to13f03.x1 NCI_CGAP_Ut2 Homo sapiens cDNA clone IMAGE:2178941 3'
            similar to TR:Q91810 Q91810 PROLINE RICH PROTEIN. ;contains element
            MER22 repetitive element ;, mRNA sequence.
ACCESSION   AI536838
VERSION     AI536838.1  GI:4450973
KEYWORDS    EST.
SOURCE      human.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 52)
  AUTHORS   NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
  TITLE     National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
            Tumor Gene Index
  JOURNAL   Unpublished (1997)
COMMENT     Contact: Robert Strausberg, Ph.D.
            Email: cgapbs-r@mail.nih.gov
            Tissue Procurement: Christopher Moskaluk, M.D., Ph.D., Michael R.
            Emmert-Buck, M.D., Ph.D.
             cDNA Library Preparation: Life Technologies, Inc.
             cDNA Library Arrayed by: Greg Lennon, Ph.D.
             DNA Sequencing by: Washington University Genome Sequencing Center
             Clone distribution: NCI-CGAP clone distribution information can be
            found through the I.M.A.G.E. Consortium/LLNL at:
            www-bio.llnl.gov/bbrp/image/image.html
            Insert Length: 1243   Std Error: 0.00
            Seq primer: -40UP from Gibco
            High quality sequence stop: 1
            POLYA=No.
FEATURES             Location/Qualifiers
     source          1. .52
                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
                     /clone="IMAGE:2178941"
                     /clone_lib="NCI_CGAP_Ut2"
                     /tissue_type="moderately-differentiated endometrial
                     adenocarcinoma, 3 pooled tumors"
                     /lab_host="DH10B"
                     /note="Organ: uterus; Vector: pCMV-SPORT6; Site_1: SalI;
                     Site_2: NotI; Cloned unidirectionally.  Primer: Oligo dT.
                     Average insert size 1.85 kb. Life Technologies catalog #:
                     11539-012"
BASE COUNT       13 a     23 c     15 g      1 t
ORIGIN


  Query Match             63.0%;  Score 12.6;  DB 9;  Length 52;
  Best Local Similarity   78.9%;  Pred. No. 7.2e+04;
  Matches   15;  Conservative    0;  Mismatches    4;  Indels    0;  Gaps    0;

Qy       2 gggtcaacgttgaggggg 20
           ||||    ||||||||||
Db      25 GGGTGTTTGTTGAGGGGG 7


RESULT   8
AA546747
LOCUS       AA546747                 57 bp    mRNA    linear   EST 05-AUG-1997
DEFINITION  vk66g11.s1 Knowles Solter mouse 2 cell Mus musculus cDNA clone
            IMAGE:959684 5', mRNA sequence.
ACCESSION   AA546747
VERSION     AA546747.1  GI:2308038
KEYWORDS    EST.
SOURCE      house mouse.
  ORGANISM  Mus musculus
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
REFERENCE   1  (bases 1 to 57)
  AUTHORS   Marra,M., Hillier,L., Allen,M., Bowles,M., Dietrich,N., Dubuque,T.,
            Geisel,S., Kucaba,T., Lacy,M., Le,M., Martin,J., Morris,M.,
            Schellenberg,K., Steptoe,M., Tan,F., Underwood,K., Moore,B.,
            Theising,B., Wylie,T., Lennon,G., Soares,B., Wilson,R. and
            Waterston,R.
  TITLE     The WashU-HHMI Mouse EST Project
  JOURNAL   Unpublished (1996)
COMMENT     Contact: Marra M/Mouse EST Project
            WashU-HHMI Mouse EST Project
            Washington University School of MedicineP
            4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108
            Tel: 314 286 1800
            Fax: 314 286 1810
            Email: mouseest@watson.wustl.edu
            This clone is available royalty-free through LLNL ; contact the
            IMAGE Consortium (info@image.llnl.gov) for further information.
            MGI:548476.
FEATURES             Location/Qualifiers
     source          1. .57
                     /organism="Mus musculus"
                     /strain="B6D2 F1/J"
                     /db_xref="taxon:10090"
                     /clone="IMAGE:959684"
                     /clone_lib="Knowles Solter mouse 2 cell"
                     /tissue_type="embryo"
                     /dev_stage="2-cell"
                     /lab_host="DH10B"
                     /note="Organ: embryo; Vector: pBluescribe (modified);
                     Site_1: MluI; Site_2: SalI; Cloned unidirectionally from
                     mRNA prepared from 13,500 2-cell stage  embryos.  Primer:
                     SalI(dT): 5'-CGGTCGACCGTCGACCGTTTTTTTTTTTTTT-3'.  cDNAs
                     were cloned into the MluI/SalI sites of a modified
                     pBluescribe  vector using commercial linkers (NEB).
                     Average insert size:  1.2 kb."
BASE COUNT       11 a     15 c     20 g     11 t
ORIGIN


  Query Match             63.0%;  Score 12.6;  DB 9;  Length 57;
  Best Local Similarity   78.9%;  Pred. No. 7.3e+04;
  Matches   15;  Conservative    0;  Mismatches    4;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgaggggg 19
           | |||||  ||| |||| ||
Db      32 GTGGTCATCGTCGAGGTGG 50


RESULT   9
AZ784783/c
LOCUS       AZ784783                 39 bp    DNA     linear   GSS 16-FEB-2001
DEFINITION  2M0028E02F Mouse 10kb plasmid UUGC1M library Mus musculus genomic
            clone UUGC2M0028E02 F, DNA sequence.
ACCESSION   AZ784783
VERSION     AZ784783.1  GI:12920868
KEYWORDS    GSS.
SOURCE      house mouse.
  ORGANISM  Mus musculus
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
REFERENCE   1  (bases 1 to 39)
  AUTHORS   Dunn,D., Aoyagi,A., Barber,M., Beacorn,T., Duval,B., Hamil,C.,
            Islam,H., Longacre,S., Mahmoud,M., Meenen,E., Pedersen,T., Reilly
            ,M., Rose,M., Rose,R., Stokes,R., Tingey,A., von Niederhausern,A.
            and Wright,D.,Weiss,R.
  TITLE     Mouse whole genome scaffolding with paired end reads from 10kb
            plasmid inserts
  JOURNAL   Unpublished (2000)
COMMENT     Contact: Robert B. Weiss
            University of Utah Genome Center
            University of Utah
            Rm. 308, Biomedical Polymers Research Bldg., 20 S. 2030 E., SLC, UT
            84112, USA
            Tel: 801 585 5606
            Fax: 801 585 7177
            Email: ddunn@genetics.utah.edu
            Insert Length: 10000   Std Error: 0.00
```

```
            Rm. 308, Biomedical Polymers Research Bldg., 20 S. 2030 E., SLC, UT
            84112, USA
            Tel: 801 585 5606
            Fax: 801 585 7177
            Email: ddunn@genetics.utah.edu
            Insert Length: 10000   Std Error: 0.00
            Plate: 0098  row: A  column: 04
            Seq primer: CGTTGTAAAACGACGGCCAGT
            Class: plasmid ends
            High quality sequence stop: 44.
FEATURES              Location/Qualifiers
     source           1..44
                      /organism="Mus musculus"
                      /strain="C57BL/6J"
                      /db_xref="taxon:10090"
                      /clone="UUGC2M0098A04"
                      /clone_lib="Mouse 10kb plasmid UUGC1M library"
                      /sex="Male"
                      /lab_host="E. Coli strain XL10-Gold, T1-resistant, F-"
                      /note="Vector: PWD42nv; Purified genomic DNA from M.
                      musculus C57BL/6J (male) was obtained  from the Jackson
                      Laboratory Mouse DNA Resource
                      (http://www.jax.org/resources/documents/dnares/). The DNA
                      was hydrodynamically sheared by repeated passage through a
                      0.005 inch orifice at constant velocity. The sheared DNA
                      was blunt end-repaired with T4 DNA polymerase and T4
                      polynucleotide kinase. Adaptor oligonucleotides were
                      ligated to the blunt ends in high  molar excess. The
                      adaptored DNA was purified and size-selected for a 9.5 to
                      10.5 kb range using preparative agarose gel
                      electrophoresis. Vector DNA was prepared from a derivative
                      of pWD42 (gi|4732114|gb|AF129072.1), a copy-number
                      inducible derivative of plasmid R1. The vector was ligated
                      with adaptors complementary to the insert adaptors and
                      purified. The sheared, adaptored mouse DNA was annealed to
                      adaptored vector DNA, and transformed into
                      chemically-competent E. coli XL10-Gold (Stratagene) cells
                      and selected for ampicillin resistance."
BASE COUNT        6 a      4 c      21 g      13 t
ORIGIN


  Query Match             63.0%;  Score 12.6;  DB 12;  Length 44;
  Best Local Similarity   78.9%;  Pred. No. 6.9e+04;
  Matches   15;  Conservative    0;  Mismatches    4;  Indels    0;  Gaps    0;

Qy       2 gggtcaacgttgaggggg 20
           ||||||  |||| || |||
Db      22 GGGTCAGGGTTGGGGTGGG 40


RESULT   5
AU106411/c
LOCUS       AU106411                 50 bp    mRNA    linear   EST 30-AUG-2001
DEFINITION  AU106411 Sugano Homo sapiens cDNA library Homo sapiens cDNA clone
            COLF0841, mRNA sequence.
ACCESSION   AU106411
VERSION     AU106411.1  GI:13555932
KEYWORDS    EST.
SOURCE      human.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 50)
  AUTHORS   Suzuki,Y., Taira,H., Tsunoda,T., Mizushima-Sugano,J., Sese,J., Hata
            ,H., Ota,T., Isogai,T., Tanaka,T., Morishita,S., Okubo,K., Sakaki
            ,Y., Nakamura,Y., Suyama,A. and Sugano,S.
  TITLE     Diverse transcriptional initiation revealed by fine, large-scale
            mapping of mRNA start sites
  JOURNAL   EMBO Rep. 2 (5), 388-393 (2001)
  MEDLINE   21270072
COMMENT     Contact: Yutaka Suzuki
            Department of Virology
            Institute of Medical Science, University of Tokyo
            4-6-1, Shirokanedai, Minatoku, Tokyo 108-8639, Japan
            Email: ysuzuki@ims.u-tokyo.ac.jp
            Suzuki,Y., Yoshitomo-Nakagawa,K., Maruyama,K., Suyama,A. and Sugano
            ,S. Construction and characterization of a full length-enriched and
            a 5'-end-enriched cDNA library. Gene 200 (1-2), 149-156 (1997).
FEATURES              Location/Qualifiers
     source           1..50
                      /organism="Homo sapiens"
                      /db_xref="taxon:9606"
                      /clone="COLF0841"
                      /clone_lib="Sugano Homo sapiens cDNA library"
BASE COUNT       15 a      15 c      11 g       9 t
ORIGIN


  Query Match             63.0%;  Score 12.6;  DB 9;  Length 50;
  Best Local Similarity   78.9%;  Pred. No. 7.1e+04;
  Matches   15;  Conservative    0;  Mismatches    4;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgaggggg 19
           ||| ||||| | ||||| |
Db      28 GGGCTCAACCTCGAGGGTG 10


RESULT   6
AU106436/c
LOCUS       AU106436                 50 bp    mRNA    linear   EST 30-AUG-2001
DEFINITION  AU106436 Sugano Homo sapiens cDNA library Homo sapiens cDNA clone
            COLF6606, mRNA sequence.
ACCESSION   AU106436
VERSION     AU106436.1  GI:13555957
KEYWORDS    EST.
SOURCE      human.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 50)
  AUTHORS   Suzuki,Y., Taira,H., Tsunoda,T., Mizushima-Sugano,J., Sese,J., Hata
            ,H., Ota,T., Isogai,T., Tanaka,T., Morishita,S., Okubo,K., Sakaki
            ,Y., Nakamura,Y., Suyama,A. and Sugano,S.
  TITLE     Diverse transcriptional initiation revealed by fine, large-scale
            mapping of mRNA start sites
  JOURNAL   EMBO Rep. 2 (5), 388-393 (2001)
  MEDLINE   21270072
COMMENT     Contact: Yutaka Suzuki
            Department of Virology
            Institute of Medical Science, University of Tokyo
            4-6-1, Shirokanedai, Minatoku, Tokyo 108-8639, Japan
            Email: ysuzuki@ims.u-tokyo.ac.jp
            Suzuki,Y., Yoshitomo-Nakagawa,K., Maruyama,K., Suyama,A. and Sugano
            ,S. Construction and characterization of a full length-enriched and
            a 5'-end-enriched cDNA library. Gene 200 (1-2), 149-156 (1997).
FEATURES              Location/Qualifiers
     source           1..50
                      /organism="Homo sapiens"
                      /db_xref="taxon:9606"
                      /clone="COLF6606"
                      /clone_lib="Sugano Homo sapiens cDNA library"
BASE COUNT       15 a      15 c      11 g       9 t
ORIGIN


  Query Match             63.0%;  Score 12.6;  DB 9;  Length 50;
  Best Local Similarity   78.9%;  Pred. No. 7.1e+04;
  Matches   15;  Conservative    0;  Mismatches    4;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgaggggg 19
           ||| ||||| | ||||| |
Db      28 GGGCTCAACCTCGAGGGTG 10


RESULT   7
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/lab_host="DH10B"
/note="Vector: pT7T3D-Pac (Pharmacia) with a modified polylinker; 1st strand cDNA was prepared from pooled bulk breast tumor tissue, and was then primed with a Not I - oligo(dT) primer. Double-stranded cDNA was ligated to Eco RI adaptors (Pharmacia), digested with Not I and cloned into the Not I and Eco RI sites of the modified pT7T3 vector. Library is not normalized. (The normalized version of this library is NCI_CGAP_Br2.) Library was constructed by Bento Soares and M. Fatima Bonaldo. "
BASE COUNT 9 a 9 c 21 g 10 t
ORIGIN

Query Match 71.0%; Score 14.2; DB 9; Length 49;
Best Local Similarity 84.2%; Pred. No. 1.4e+04;
Matches 16; Conservative 0; Mismatches 3; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggg 19
||||.||||.|||.|||||
Db 21 GGGGCCAACCTTGGGGGGG 39

RESULT 2
AA894387
LOCUS AA894387 37 bp mRNA linear EST 06-APR-1998
DEFINITION of89d05.s1 NCI_CGAP_Li5 Homo sapiens cDNA clone IMAGE:1437513 3' similar to SW:VNUA_PRVKA P33485 PROBABLE NUCLEAR ANTIGEN. ;, mRNA sequence.
ACCESSION AA894387
VERSION AA894387.1 GI:3030788
KEYWORDS EST.
SOURCE human.
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE 1 (bases 1 to 37)
AUTHORS NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
TITLE National Cancer Institute, Cancer Genome Anatomy Project (CGAP), Tumor Gene Index
JOURNAL Unpublished (1997)
COMMENT Contact: Robert Strausberg, Ph.D.
Email: cgapbs-r@mail.nih.gov
Tissue Procurement: Christopher A. Moskaluk, M.D., Ph.D., Michael R. Emmert-Buck, M.D., Ph.D.
cDNA Library Preparation: Life Technologies, Inc.
cDNA Library Arrayed by: Greg Lennon, Ph.D.
DNA Sequencing by: Washington University Genome Sequencing Center
Clone distribution: NCI-CGAP clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: www-bio.llnl.gov/bbrp/image/image.html

Trace considered overall poor quality
Seq primer: -40m13 fwd. ET from Amersham
High quality sequence stop: 1.
FEATURES Location/Qualifiers
source 1. .37
/organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="IMAGE:1437513"
/clone_lib="NCI_CGAP_Li5"
/tissue_type="hepatic adenoma"
/lab_host="DH10B"
/note="Organ: liver; Vector: pCMV-SPORT4; Site_1: SalI; Site_2: NotI; Cloned unidirectionally. Primer: Oligo dT. Average insert size 0.8 kb."
BASE COUNT 11 a 7 c 17 g 2 t
ORIGIN

Query Match 68.0%; Score 13.6; DB 9; Length 37;
Best Local Similarity 80.0%; Pred. No. 2.4e+04;
Matches 16; Conservative 0; Mismatches 4; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggg 20
||||||||.|..|||||..
Db 12 GGGGTCAATGCGGAGGGCGG 31

RESULT 3
AV838294
LOCUS AV838294 44 bp mRNA linear EST 07-NOV-2001
DEFINITION AV838294 Nori Satoh unpublished cDNA library, egg Ciona intestinalis cDNA clone rcieg03b09, mRNA sequence.
ACCESSION AV838294
VERSION AV838294.1 GI:16782445
KEYWORDS EST.
SOURCE Ciona intestinalis.
ORGANISM Ciona intestinalis
Eukaryota; Metazoa; Chordata; Urochordata; Ascidiacea; Enterogona; Phlebobranchia; Cionidae; Ciona.
REFERENCE 1 (bases 1 to 44)
AUTHORS Satoh,N., Satou,Y., Kohara,Y. and Shin-i,T.
TITLE Expressed genes in Ciona intestinalis
JOURNAL Unpublished (2000)
COMMENT Contact: Nori Satoh
Department of Zoology
Kyoto University
Sakyo-ku, Kyoto, Kyoto 606-8502, Japan
Tel: 81-75-753-4081
Fax: 81-75-705-1113
Email: satoh@ascidian.zool.kyoto-u.ac.jp.
FEATURES Location/Qualifiers
source 1. .44
/organism="Ciona intestinalis"
/db_xref="taxon:7719"
/clone="rcieg03b09"
/clone_lib="Nori Satoh unpublished cDNA library, egg"
/tissue_type="whole animal"
/dev_stage="egg"
BASE COUNT 8 a 5 c 17 g 13 t 1 others
ORIGIN

Query Match 68.0%; Score 13.6; DB 9; Length 44;
Best Local Similarity 80.0%; Pred. No. 2.5e+04;
Matches 16; Conservative 0; Mismatches 4; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggg 20
|||||||||.|||..||||
Db 18 GGGGTCAACATTGGTTGGGG 37

RESULT 4
AZ823752
LOCUS AZ823752 44 bp DNA linear GSS 20-FEB-2001
DEFINITION 2M0098A04F Mouse 10kb plasmid UUGC1M library Mus musculus genomic clone UUGC2M0098A04 F, DNA sequence.
ACCESSION AZ823752
VERSION AZ823752.1 GI:12993660
KEYWORDS GSS.
SOURCE house mouse.
ORGANISM Mus musculus
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
REFERENCE 1 (bases 1 to 44)
AUTHORS Dunn,D., Aoyagi,A., Barber,M., Beacorn,T., Duval,B., Hamil,C., Islam,H., Longacre,S., Mahmoud,M., Meenen,E., Pedersen,T., Reilly,M., Rose,M., Rose,R., Stokes,R., Tingey,A., von Niederhausern,A. and Wright,D.,Weiss,R.
TITLE Mouse whole genome scaffolding with paired end reads from 10kb plasmid inserts
JOURNAL Unpublished (2000)
COMMENT Contact: Robert B. Weiss
University of Utah Genome Center
University of Utah

GenCore version 4.5

OM nucleic - nucleic search, using sw model

Run on: June 5, 2002, 23:43:28 ; Search time 1603.03 Seconds
(without alignments)
168.393 Million cell updates/sec

Title: US-09-655-319-12
Perfect score: 20
Sequence: 1 ggggtcaacgttgagggggg 20

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 13736207 seqs, 6748477542 residues

Total number of hits satisfying chosen parameters: 125200

Minimum DB seq length: 0
Maximum DB seq length: 60

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : EST:*
1: em_estba:*
2: em_esthum:*
3: em_estin:*
4: em_estmu:*
5: em_estov:*
6: em_estpl:*
7: em_estro:*
8: em_htc:*
9: gb_est1:*
10: gb_est2:*
11: gb_htc:*
12: gb_gss:*
13: em_gss_hum:*
14: em_gss_inv:*
15: em_gss_pln:*
16: em_gss_vrt:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	14.2	71.0	49	9	AA513131	AA513131 nh78f09.s
2	13.6	68.0	37	9	AA894387	AA894387 of89d05.s
3	13.6	68.0	44	9	AV838294	AV838294 AV838294
4	12.6	63.0	44	12	AZ823752	AZ823752 2M0098A04
c 5	12.6	63.0	50	9	AU106411	AU106411 AU106411
c 6	12.6	63.0	50	9	AU106436	AU106436 AU106436
c 7	12.6	63.0	52	9	AI536838	to13f03.x
8	12.6	63.0	57	9	AA546747	AA546747 vk66g11.s
c 9	12.2	61.0	39	12	AZ784783	AZ784783 2M0028E02
c 10	12.2	61.0	50	9	AU105933	AU105933 AU105933
c 11	12.2	61.0	53	9	AV833695	AV833695 AV833695
c 12	12.2	61.0	57	10	BE976974	BE976974 bs58d11.y
13	12	60.0	31	9	AI460125	AI460125 ar79b03.x
c 14	12	60.0	37	9	AI358661	AI358661 qx60e09.x
c 15	12	60.0	43	9	AI801617	AI801617 to91g08.x
16	12	60.0	46	9	AA936385	AA936385 od49g03.s
17	12	60.0	46	9	AI702349	AI702349 tz66b10.x
18	12	60.0	46	10	BJ044386	BJ044386 BJ044386
19	12	60.0	49	9	AI613255	AI613255 ty35b09.x
20	12	60.0	50	9	AU107236	AU107236 AU107236
21	12	60.0	52	9	AI023053	AI023053 ow65c12.s
c 22	12	60.0	52	9	AI431119	AI431119 sa22a06.y
c 23	12	60.0	52	9	AI443418	AI443418 sa31h11.x
24	12	60.0	55	9	AA972473	AA972473 op42a11.s
c 25	12	60.0	56	12	AZ441061	AZ441061 1M0232E03
26	12	60.0	58	9	AA983483	AA983483 or45g09.s
27	11.8	59.0	36	10	BJ060990	BJ060990 BJ060990
c 28	11.8	59.0	47	12	AZ663408	AZ663408 1M0543I01
c 29	11.8	59.0	52	10	BF643317	BF643317 NF006H07E
c 30	11.8	59.0	54	9	AI654272	AI654272 tq89e10.x
c 31	11.8	59.0	59	12	BH011446	BH011446 BG01969-3
c 32	11.6	58.0	34	12	AZ441501	AZ441501 1M0233L15
33	11.6	58.0	37	12	AZ501429	AZ501429 1M0340I13
34	11.6	58.0	46	12	AZ325750	AZ325750 1M0048H21
c 35	11.6	58.0	47	12	AZ658096	AZ658096 1M0534K12
c 36	11.6	58.0	50	9	AU108089	AU108089 AU108089
37	11.6	58.0	52	10	BJ035097	BJ035097 BJ035097
c 38	11.6	58.0	58	12	B05431	B05431 cSRL-62e5-u
39	11.6	58.0	59	12	TA142G08Q	AL466521 T. brucei
40	11.6	58.0	60	12	AZ982649	AZ982649 2M0263H04
41	11.4	57.0	32	10	BJ066180	BJ066180 BJ066180
c 42	11.4	57.0	56	9	AW156861	AW156861 se31g08.y
c 43	11.2	56.0	43	9	AI311377	AI311377 qo88e07.x
44	11.2	56.0	45	12	AZ366532	AZ366532 1M0115L18
c 45	11.2	56.0	50	9	AU102740	AU102740 AU102740

ALIGNMENTS

RESULT 1
AA513131
LOCUS AA513131 49 bp mRNA linear EST 19-AUG-1997
DEFINITION nh78f09.s1 NCI_CGAP_Br1.1 Homo sapiens cDNA clone IMAGE:964649 3' similar to TR:G1008544 G1008544 METASTASIS-ASSOCIATED MTA1. ;, mRNA sequence.
ACCESSION AA513131
VERSION AA513131.1 GI:2251543
KEYWORDS EST.
SOURCE human.
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE 1 (bases 1 to 49)
AUTHORS NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
TITLE National Cancer Institute, Cancer Genome Anatomy Project (CGAP), Tumor Gene Index
JOURNAL Unpublished (1997)
COMMENT Contact: Robert Strausberg, Ph.D.
Email: cgapbs-r@mail.nih.gov
Tissue Procurement: Christopher Moskaluk, M.D., Ph.D., Michael R. Emmert-Buck, M.D., Ph.D.
cDNA Library Preparation: M. Bento Soares, Ph.D.
cDNA Library Arrayed by: Greg Lennon, Ph.D.
DNA Sequencing by: Washington University Genome Sequencing Center
Clone distribution: NCI-CGAP clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: www-bio.llnl.gov/bbrp/image/image.html

Trace considered overall poor quality
Seq primer: -40m13 fwd. ET from Amersham
High quality sequence stop: 1.
FEATURES Location/Qualifiers
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/sex="female, pooled"
/tissue_type="breast"

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;    TITLE OF INVENTION:  ACTIVATION THROUGH A3 ADENOSINE RECEPTOR ANTAGONISM
;    NUMBER OF SEQUENCES:  56
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Merck & Co., Inc.
;      STREET:  P.O.Box 2000
;      CITY:  Rahway
;      STATE:  New Jersey
;      COUNTRY:  United States
;      ZIP:  07065
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/233,009
;      FILING DATE:  25-APR-1994
;      CLASSIFICATION:  424
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Bencen, Gerard H
;      REGISTRATION NUMBER:  35,746
;      REFERENCE/DOCKET NUMBER:  19219
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (908) 594-3901
;      TELEFAX:  (908)594-4720
;  INFORMATION FOR SEQ ID NO:  4:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  60 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  cDNA
;    HYPOTHETICAL:  NO
;    ANTI-SENSE:  NO
US-08-233-009-4


  Query Match           68.0%;  Score 13.6;  DB 1;  Length 60;
  Best Local Similarity  80.0%;  Pred. No. 3e+02;
  Matches   16;  Conservative    0;  Mismatches    4;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||  ||| || |||||
Db     23 GGGGTCCTCGTCGACGGGGG 42



Search completed: June  6, 2002, 01:48:00
Job time: 3874 sec
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; NUMBER OF SEQUENCES: 27
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: LAHIVE & COCKFIELD
; STREET: 60 STATE STREET, SUITE 510
; CITY: BOSTON
; STATE: MASSACHUSETTS
; COUNTRY: USA
; ZIP: 02109-1875
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: ASCII text
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/386,063
; FILING DATE:
; CLASSIFICATION:
; ATTORNEY/AGENT INFORMATION:
; NAME: ARNOLD, BETH E.
; REGISTRATION NUMBER: 35,430
; REFERENCE/DOCKET NUMBER: UIZ-013CP
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (617)227-7400
; TELEFAX: (617)227-5941
; INFORMATION FOR SEQ ID NO: 27:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 20 base pairs
; TYPE: nucleic acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: DNA
US-08-386-063-27

Query Match 76.0%; Score 15.2; DB 4; Length 20;
Best Local Similarity 85.0%; Pred. No. 47;
Matches 17; Conservative 0; Mismatches 3; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
|||||||| |||||||||
Db 1 GGGGTCAAGTCTGAGGGGGG 20

RESULT 13
US-09-082-649B-63
; Sequence 63, Application US/09082649B
; Patent No. 6339068
; GENERAL INFORMATION:
; APPLICANT: Davis, Heather L.
; APPLICANT: Krieg, Arthur M.
; APPLICANT: Schorr, Joachim
; APPLICANT: Wu, Tong
; TITLE OF INVENTION: Vectors and Methods for Immunization or
; TITLE OF INVENTION: Therapeutic Protocols
; FILE REFERENCE: C1039/7009
; CURRENT APPLICATION NUMBER: US/09/082,649B
; CURRENT FILING DATE: 1998-05-20
; PRIOR APPLICATION NUMBER: US 60/047,233
; PRIOR FILING DATE: 1997-05-20
; PRIOR APPLICATION NUMBER: US 60/047,209
; PRIOR FILING DATE: 1997-05-20
; NUMBER OF SEQ ID NOS: 85
; SOFTWARE: FastSEQ for Windows Version 3.0
; SEQ ID NO 63
; LENGTH: 20
; TYPE: DNA
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic oligonucleotide
US-09-082-649B-63

Query Match 68.0%; Score 13.6; DB 4; Length 20;
Best Local Similarity 80.0%; Pred. No. 2.8e+02;
Matches 16; Conservative 0; Mismatches 4; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
||||| ||||| |||||||
Db 1 ggggttgacgttttgggggg 20

RESULT 14
US-08-349-696-4
; Sequence 4, Application US/08349696
; Patent No. 5599671
; GENERAL INFORMATION:
; APPLICANT: Jacobson, Marlene A
; APPLICANT: Johnson, Robert G
; APPLICANT: Luneau, Christopher J
; APPLICANT: Salvatore, Christopher A
; TITLE OF INVENTION: Human Adenosine Receptors
; NUMBER OF SEQUENCES: 28
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Merck & Co., Inc.
; STREET: P.O. Box 2000
; CITY: Rahway
; STATE: NJ
; COUNTRY: United States
; ZIP: 07065
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: Macintosh IIci
; OPERATING SYSTEM: Macintosh
; SOFTWARE: Microsoft Word 5.0
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/349,696
; FILING DATE:
; CLASSIFICATION: 530
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: us/08/005945
; FILING DATE:
; ATTORNEY/AGENT INFORMATION:
; NAME: Meredith, Roy D.
; REGISTRATION NUMBER: 30,777
; REFERENCE/DOCKET NUMBER: 18699IA
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (908)594-4678
; TELEFAX: (908)594-4720
; INFORMATION FOR SEQ ID NO: 4:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 60 base pairs
; TYPE: nucleic acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: cDNA
US-08-349-696-4

Query Match 68.0%; Score 13.6; DB 1; Length 60;
Best Local Similarity 80.0%; Pred. No. 3e+02;
Matches 16; Conservative 0; Mismatches 4; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
|||||| ||| || |||||
Db 23 GGGGTCCTCGTCGACGGGGG 42

RESULT 15
US-08-233-009-4
; Sequence 4, Application US/08233009
; Patent No. 5646156
; GENERAL INFORMATION:
; APPLICANT: Jacobson, Marlene A
; APPLICANT: Johnson, Robert G
; APPLICANT: Salvatore, Christopher A
; TITLE OF INVENTION: INHIBITION OF EOSINOPHIL

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RESULT  9
US-09-286-098-52
; Sequence 52, Application US/09286098
; Patent No. 6218371
; GENERAL INFORMATION:
;  APPLICANT: Krieg, Arthur M.
;  APPLICANT: Weiner, George
;  TITLE OF INVENTION: Methods and Products for Stimulating the
;  TITLE OF INVENTION: Immune System Using Immunotherapeutic Oligonucleotides and
;  TITLE OF INVENTION: Cytokines
;  FILE REFERENCE: C1039/7026/HCL
;  CURRENT APPLICATION NUMBER: US/09/286,098
;  CURRENT FILING DATE: 1999-04-02
;  EARLIER APPLICATION NUMBER: US 60/080,729
;  EARLIER FILING DATE: 1998-04-03
;  NUMBER OF SEQ ID NOS: 105
;  SOFTWARE: FastSEQ for Windows Version 3.0
; SEQ ID NO 52
;   LENGTH: 19
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: Synthetic  Sequence
US-09-286-098-52


  Query Match             87.0%;  Score 17.4;  DB 4;  Length 19;
  Best Local Similarity   94.7%;  Pred. No. 4;
  Matches   18;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 19
          ||||||||||||||| ||||
Db      1 ggggtcaacgttgacgggg 19


RESULT  10
US-08-960-774-12
; Sequence 12, Application US/08960774
; Patent No. 6239116
;  GENERAL INFORMATION:
;    APPLICANT:  Krieg et al.,
;    TITLE OF INVENTION:  IMMUNOSTIMULATORY NUCLEIC ACID MOLECULES
;    NUMBER OF SEQUENCES:  111
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Fish & Richardson P.C.
;      STREET:  4225 Executive Square, Suite 1400
;      CITY:  La Jolla
;      STATE:  CA
;      COUNTRY:  USA
;      ZIP:  92037
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  ASCII text
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/960,774
;      FILING DATE:  30-October-1997
;      CLASSIFICATION:  514
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  U.S. Serial No. 6239116  08/738,652
;      FILING DATE:  October 30, 1996
;      CLASSIFICATION:  514
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Haile, Lisa A.
;      REGISTRATION NUMBER:  38,347
;      REFERENCE/DOCKET NUMBER:  08918/012001
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  619/678-5070
;      TELEFAX:  619/678-5099
;  INFORMATION FOR SEQ ID NO:  12:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  19 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  DNA
US-08-960-774-12


  Query Match             87.0%;  Score 17.4;  DB 4;  Length 19;
  Best Local Similarity   94.7%;  Pred. No. 4;
  Matches   18;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 19
          ||||||||||||||| ||||
Db      1 GGGGTCAACGTTGACGGGG 19


RESULT  11
US-08-386-063-27
; Sequence 27, Application US/08386063
; Patent No. 6008200
;  GENERAL INFORMATION:
;    APPLICANT:  Arthur M. Krieg, M.D.
;    TITLE OF INVENTION:  IMMUNOMODULATORY OLIGONUCLEOTIDES
;    NUMBER OF SEQUENCES:  27
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  LAHIVE & COCKFIELD
;      STREET:  60 STATE STREET, SUITE 510
;      CITY:  BOSTON
;      STATE:  MASSACHUSETTS
;      COUNTRY:  USA
;      ZIP:  02109-1875
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  ASCII text
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/386,063
;      FILING DATE:
;      CLASSIFICATION:  424
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ARNOLD, BETH E.
;      REGISTRATION NUMBER:  35,430
;      REFERENCE/DOCKET NUMBER:  UI2-013CP
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (617)227-7400
;      TELEFAX:  (617)227-5941
;  INFORMATION FOR SEQ ID NO:  27:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  20 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  DNA
US-08-386-063-27


  Query Match             76.0%;  Score 15.2;  DB 3;  Length 20;
  Best Local Similarity   85.0%;  Pred. No. 47;
  Matches   17;  Conservative    0;  Mismatches    3;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||   |||||||||
Db      1 GGGGTCAAGTCTGAGGGGGG 20


RESULT  12
US-08-386-063-27
; Sequence 27, Application US/08386063
; Patent No. 6194388
;  GENERAL INFORMATION:
;    APPLICANT:  Arthur M. Krieg, M.D.
;    TITLE OF INVENTION:  IMMUNOMODULATORY OLIGONUCLEOTIDES
```

```
  Query Match           100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT   6
US-08-386-063-1
; Sequence 1, Application US/08386063
; Patent No. 6008200
;  GENERAL INFORMATION:
;    APPLICANT:  Arthur M. Krieg, M.D.
;    TITLE OF INVENTION:  IMMUNOMODULATORY OLIGONUCLEOTIDES
;    NUMBER OF SEQUENCES:  27
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  LAHIVE & COCKFIELD
;      STREET:  60 STATE STREET, SUITE 510
;      CITY:  BOSTON
;      STATE:  MASSACHUSETTS
;      COUNTRY:  USA
;      ZIP:  02109-1875
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  ASCII text
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/386,063
;      FILING DATE:
;      CLASSIFICATION:  424
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ARNOLD, BETH E.
;      REGISTRATION NUMBER:  35,430
;      REFERENCE/DOCKET NUMBER:  UIZ-013CP
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (617)227-7400
;      TELEFAX:  (617)227-5941
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  20 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  DNA
US-08-386-063-1


  Query Match           92.0%;  Score 18.4;  DB 3;  Length 20;
  Best Local Similarity  95.0%;  Pred. No. 1.3;
  Matches   19;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||| |||||||
Db      1 GGGGTCAACGTTCAGGGGGG 20


RESULT   7
US-08-386-063-1
; Sequence 1, Application US/08386063
; Patent No. 6194388
;  GENERAL INFORMATION:
;    APPLICANT:  Arthur M. Krieg, M.D.
;    TITLE OF INVENTION:  IMMUNOMODULATORY OLIGONUCLEOTIDES
;    NUMBER OF SEQUENCES:  27
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  LAHIVE & COCKFIELD
;      STREET:  60 STATE STREET, SUITE 510
;      CITY:  BOSTON
;      STATE:  MASSACHUSETTS
;      COUNTRY:  USA
;      ZIP:  02109-1875
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  ASCII text
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/386,063
;      FILING DATE:
;      CLASSIFICATION:
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ARNOLD, BETH E.
;      REGISTRATION NUMBER:  35,430
;      REFERENCE/DOCKET NUMBER:  UIZ-013CP
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (617)227-7400
;      TELEFAX:  (617)227-5941
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  20 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  DNA
US-08-386-063-1


  Query Match           92.0%;  Score 18.4;  DB 4;  Length 20;
  Best Local Similarity  95.0%;  Pred. No. 1.3;
  Matches   19;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||| |||||||
Db      1 GGGGTCAACGTTCAGGGGGG 20


RESULT   8
US-09-030-701-21
; Sequence 21, Application US/09030701B
; Patent No. 6214806
; GENERAL INFORMATION:
;  APPLICANT:  Krieg, Arthur M.
;  APPLICANT:  Schwartz, David A.
;  TITLE OF INVENTION:  USE OF NUCLEIC ACIDS CONTAINING
;  TITLE OF INVENTION:  UNMETHYLATED CpG DINUCLEOTIDE IN THE TREATMENT OF
;  TITLE OF INVENTION:  LPS-ASSOCIATED DISORDERS
;  FILE REFERENCE:  C1039/7011
;  CURRENT APPLICATION NUMBER: US/09/030,701B
;  CURRENT FILING DATE:  1998-02-25
;  PRIOR APPLICATION NUMBER:  60/039,405
;  PRIOR FILING DATE:  1997-02-28
;  NUMBER OF SEQ ID NOS:  65
;  SOFTWARE:  FastSEQ for Windows Version 3.0
; SEQ ID NO 21
;   LENGTH: 19
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: synthetic oligonucleotide
US-09-030-701-21


  Query Match           87.0%;  Score 17.4;  DB 4;  Length 19;
  Best Local Similarity  94.7%;  Pred. No. 4;
  Matches   18;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggg 19
          |||||||||||||| ||||
Db      1 ggggtcaacgttgacgggg 19
```

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;  SOFTWARE:  FastSEQ for Windows Version 3.0
; SEQ ID NO 63
;   LENGTH: 20
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: synthetic oligonucleotide
US-09-030-701-63


  Query Match             100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT   3
US-08-960-774-90
; Sequence 90, Application US/08960774
; Patent No. 6239116
;  GENERAL INFORMATION:
;    APPLICANT:  Krieg et al.,
;    TITLE OF INVENTION:  IMMUNOSTIMULATORY NUCLEIC ACID MOLECULES
;    NUMBER OF SEQUENCES:  111
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Fish & Richardson P.C.
;      STREET:  4225 Executive Square, Suite 1400
;      CITY:  La Jolla
;      STATE:  CA
;      COUNTRY:  USA
;      ZIP:  92037
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  ASCII text
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/960,774
;      FILING DATE:  30-October-1997
;      CLASSIFICATION:  514
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  U.S. Serial No. 6239116  08/738,652
;      FILING DATE:  October 30, 1996
;      CLASSIFICATION:  514
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Haile, Lisa A.
;      REGISTRATION NUMBER:  38,347
;      REFERENCE/DOCKET NUMBER:  08918/012001
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  619/678-5070
;      TELEFAX:  619/678-5099
;  INFORMATION FOR SEQ ID NO:  90:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  20 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  cDNA
US-08-960-774-90


  Query Match             100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   4
US-09-082-649B-52
; Sequence 52, Application US/09082649B
; Patent No. 6339068
; GENERAL INFORMATION:
;  APPLICANT:  Davis, Heather L.
;  APPLICANT:  Krieg, Arthur M.
;  APPLICANT:  Schorr, Joachim
;  APPLICANT:  Wu, Tong
;  TITLE OF INVENTION:  Vectors and Methods for Immunization or
;  TITLE OF INVENTION:  Therapeutic Protocols
;  FILE REFERENCE:  C1039/7009
;  CURRENT APPLICATION NUMBER: US/09/082,649B
;  CURRENT FILING DATE:  1998-05-20
;  PRIOR APPLICATION NUMBER:  US 60/047,233
;  PRIOR FILING DATE:  1997-05-20
;  PRIOR APPLICATION NUMBER:  US 60/047,209
;  PRIOR FILING DATE:  1997-05-20
;  NUMBER OF SEQ ID NOS:  85
;  SOFTWARE:  FastSEQ for Windows Version 3.0
; SEQ ID NO 52
;   LENGTH: 20
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: synthetic oligonucleotide
;   NAME/KEY: misc_feature
;   LOCATION: (0)...(0)
;   OTHER INFORMATION: Has a phosphorothioate backbone.
US-09-082-649B-52


  Query Match             100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT   5
US-09-082-649B-59
; Sequence 59, Application US/09082649B
; Patent No. 6339068
; GENERAL INFORMATION:
;  APPLICANT:  Davis, Heather L.
;  APPLICANT:  Krieg, Arthur M.
;  APPLICANT:  Schorr, Joachim
;  APPLICANT:  Wu, Tong
;  TITLE OF INVENTION:  Vectors and Methods for Immunization or
;  TITLE OF INVENTION:  Therapeutic Protocols
;  FILE REFERENCE:  C1039/7009
;  CURRENT APPLICATION NUMBER: US/09/082,649B
;  CURRENT FILING DATE:  1998-05-20
;  PRIOR APPLICATION NUMBER:  US 60/047,233
;  PRIOR FILING DATE:  1997-05-20
;  PRIOR APPLICATION NUMBER:  US 60/047,209
;  PRIOR FILING DATE:  1997-05-20
;  NUMBER OF SEQ ID NOS:  85
;  SOFTWARE:  FastSEQ for Windows Version 3.0
; SEQ ID NO 59
;   LENGTH: 20
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: synthetic oligonucleotide
;   NAME/KEY: misc_feature
;   LOCATION: (0)...(0)
;   OTHER INFORMATION: Has SOS-ODN backbone with two S-linkages at the 5'
;   OTHER INFORMATION: end, five S-linkages at the 3' end, and O-linkages
;   OTHER INFORMATION: in between.
US-09-082-649B-59
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GenCore version 4.5

OM nucleic - nucleic search, using sw model

Run on: June 6, 2002, 00:43:26 ; Search time 44.98 Seconds
(without alignments)
109.219 Million cell updates/sec

Title: US-09-655-319-12
Perfect score: 20
Sequence: 1 ggggtcaacgttgagggggg 20

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 383533 seqs, 122816752 residues

Total number of hits satisfying chosen parameters: 566630

Minimum DB seq length: 0
Maximum DB seq length: 60

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued_Patents_NA:*
1: /cgn2_6/ptodata/1/ina/5A_COMB.seq:*
2: /cgn2_6/ptodata/1/ina/5B_COMB.seq:*
3: /cgn2_6/ptodata/1/ina/6A_COMB.seq:*
4: /cgn2_6/ptodata/1/ina/6B_COMB.seq:*
5: /cgn2_6/ptodata/1/ina/PCTUS_COMB.seq:*
6: /cgn2_6/ptodata/1/ina/backfiles1.seq:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

	Result No.	Score	% Query Match	Length	DB	ID	Description
	1	20	100.0	20	4	US-08-738-652-12	Sequence 12, Appl
	2	20	100.0	20	4	US-09-030-701-63	Sequence 63, Appl
	3	20	100.0	20	4	US-08-960-774-90	Sequence 90, Appl
	4	20	100.0	20	4	US-09-082-649B-52	Sequence 52, Appl
	5	20	100.0	20	4	US-09-082-649B-59	Sequence 59, Appl
	6	18.4	92.0	20	3	US-08-386-063-1	Sequence 1, Appli
	7	18.4	92.0	20	4	US-08-386-063-1	Sequence 1, Appli
	8	17.4	87.0	19	4	US-09-030-701-21	Sequence 21, Appl
	9	17.4	87.0	19	4	US-09-286-098-52	Sequence 52, Appl
	10	17.4	87.0	19	4	US-08-960-774-12	Sequence 12, Appl
	11	15.2	76.0	20	3	US-08-386-063-27	Sequence 27, Appl
	12	15.2	76.0	20	4	US-08-386-063-27	Sequence 27, Appl
	13	13.6	68.0	20	4	US-09-082-649B-63	Sequence 63, Appl
	14	13.6	68.0	60	1	US-08-349-696-4	Sequence 4, Appli
	15	13.6	68.0	60	1	US-08-233-009-4	Sequence 4, Appli
	16	13.6	68.0	60	1	US-08-560-231-4	Sequence 4, Appli
	17	13.6	68.0	60	4	US-09-080-704A-4	Sequence 4, Appli
	18	13.4	67.0	20	2	US-08-890-980-67	Sequence 67, Appl
c	19	13.4	67.0	20	2	US-08-890-980-69	Sequence 69, Appl
	20	13.4	67.0	20	3	US-09-032-894-67	Sequence 67, Appl
c	21	13.4	67.0	20	3	US-09-032-894-69	Sequence 69, Appl
	22	13.4	67.0	20	4	US-09-031-626-67	Sequence 67, Appl
c	23	13.4	67.0	20	4	US-09-031-626-69	Sequence 69, Appl
	24	13.4	67.0	21	1	US-08-066-325-127	Sequence 127, App
	25	13.4	67.0	31	2	US-08-890-980-68	Sequence 68, Appl
c	26	13.4	67.0	31	2	US-08-890-980-70	Sequence 70, Appl
	27	13.4	67.0	31	3	US-09-032-894-68	Sequence 68, Appl
c	28	13.4	67.0	31	3	US-09-032-894-70	Sequence 70, Appl
	29	13.4	67.0	31	4	US-09-031-626-68	Sequence 68, Appl
c	30	13.4	67.0	31	4	US-09-031-626-70	Sequence 70, Appl
c	31	13.4	67.0	32	3	US-09-073-354-12	Sequence 12, Appl
c	32	13.4	67.0	32	3	US-08-656-005A-12	Sequence 12, Appl
c	33	13.4	67.0	32	3	US-09-073-259-12	Sequence 12, Appl
c	34	13.4	67.0	32	4	US-09-363-095-12	Sequence 12, Appl
c	35	13.4	67.0	32	4	US-09-418-027-12	Sequence 12, Appl
	36	13.2	66.0	34	1	US-08-244-378A-24	Sequence 24, Appl
	37	13	65.0	15	1	US-08-452-196A-8	Sequence 8, Appli
	38	12.8	64.0	19	3	US-08-594-452-59	Sequence 59, Appl
	39	12.8	64.0	19	3	US-09-258-408-59	Sequence 59, Appl
	40	12.8	64.0	23	3	US-08-594-452-60	Sequence 60, Appl
	41	12.8	64.0	23	3	US-09-258-408-60	Sequence 60, Appl
	42	12.6	63.0	19	4	US-08-738-652-50	Sequence 50, Appl
	43	12.6	63.0	19	4	US-09-030-701-22	Sequence 22, Appl
	44	12.6	63.0	19	4	US-08-960-774-41	Sequence 41, Appl
	45	12.6	63.0	26	1	US-08-153-051B-34	Sequence 34, Appl

ALIGNMENTS

```
RESULT   1
US-08-738-652-12
; Sequence 12, Application US/08738652B
; Patent No. 6207646
; GENERAL INFORMATION:
;  APPLICANT: Krieg, Arthur M.
;  TITLE OF INVENTION: Immunostimulatory Nucleic Acid Molecules
;  FILE REFERENCE: C1039/7004 HCL
;  CURRENT APPLICATION NUMBER: US/08/738,652B
;  CURRENT FILING DATE: 1996-10-30
;  EARLIER APPLICATION NUMBER: US 08/276,358
;  EARLIER FILING DATE: 1994-07-15
;  EARLIER APPLICATION NUMBER: US 08/386,063
;  EARLIER FILING DATE: 1995-02-07
;  NUMBER OF SEQ ID NOS: 55
;  SOFTWARE: FastSEQ for Windows Version 3.0
; SEQ ID NO 12
;   LENGTH: 20
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: Synthetic oligonucleotide
US-08-738-652-12


  Query Match             100.0%;  Score 20;  DB 4;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 0.22;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       1 ggggtcaacgttgagggggg 20
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Db       1 ggggtcaacgttgagggggg 20


RESULT   2
US-09-030-701-63
; Sequence 63, Application US/09030701B
; Patent No. 6214806
; GENERAL INFORMATION:
;  APPLICANT:  Krieg, Arthur M.
;  APPLICANT:  Schwartz, David A.
;  TITLE OF INVENTION:  USE OF NUCLEIC ACIDS CONTAINING
;  TITLE OF INVENTION:  UNMETHYLATED CpG DINUCLEOTIDE IN THE TREATMENT OF
;  TITLE OF INVENTION:  LPS-ASSOCIATED DISORDERS
;  FILE REFERENCE:  C1039/7011
;  CURRENT APPLICATION NUMBER: US/09/030,701B
;  CURRENT FILING DATE:  1998-02-25
;  PRIOR APPLICATION NUMBER:  60/039,405
;  PRIOR FILING DATE:  1997-02-28
;  NUMBER OF SEQ ID NOS:  65
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XX
PF 25-SEP-2000; 2000WO-US26383.
XX
PR 25-SEP-1999; 99US-0156113.
PR 27-SEP-1999; 99US-0156135.
PR 23-AUG-2000; 2000US-0227436.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GMBH.
XX
PI Krieg AM, Schetter C, Vollmer J;
XX
DR WPI; 2001-273485/28.
XX
PT Vaccinating against tumors, infectious diseases, allergies and asthma
PT using immunostimulatory Py-rich and TG nucleic acids -
XX
PS Claim 101; Page 57; 338pp; English.
XX
CC The present invention relates to a method for stimulating an immune
CC response. The method comprises administering an immunostimulatory nucleic
CC acid to a non-rodent subject in sufficient quantity to stimulate an
CC immune response. The present sequence is one such immunostimulatory
CC nucleic acid. The immunostimulatory nucleic acids can be pyrimidine rich
CC (py-rich) or thymidine (T) rich. The method is used to vaccinate subjects
CC against tumour antigens, viral antigens (e.g. herpesviridae, retroviridae
CC and/or orthomyxoviridae), bacterial antigens (e.g. toxoplasma,
CC haemophilus, campylobacter, clostridium, Escherichia coli and/or
CC staphylococcus), fungal antigens and/or parasitic antigens. The method is
CC also useful for preventing cancer, asthma, infectious disease, allergy or
CC immune deficiency. The present sequence can also be used to redirect a
CC Th2 to a Th1 immune response and to activate immune cells.
CC Note: the present sequence may have a phosphorothioate backbone.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

RESULT 15
AAF99764
ID AAF99764 standard; DNA; 20 BP.
XX
AC AAF99764;
XX
DT 12-JUN-2001 (first entry)
XX
DE Immunostimulatory nucleic acid #880.
XX
KW Vaccine; cytostatic; virucidal; bactericidal; fungicidal; anti-parasitic;
KW immunostimulatory; tumour; viral infection; bacterial infection;
KW fungal infection; parasitic infection; cancer; asthma;
KW infectious disease; allergy; immune deficiency; phosphorothioate; ss.
XX
OS Synthetic.
XX
PN WO200122972-A2.
XX
PD 05-APR-2001.
XX
PF 25-SEP-2000; 2000WO-US26383.
XX
PR 25-SEP-1999; 99US-0156113.
PR 27-SEP-1999; 99US-0156135.
PR 23-AUG-2000; 2000US-0227436.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GMBH.
XX
PI Krieg AM, Schetter C, Vollmer J;
XX
DR WPI; 2001-273485/28.
XX
PT Vaccinating against tumors, infectious diseases, allergies and asthma
PT using immunostimulatory Py-rich and TG nucleic acids -
XX
PS Claim 101; Page 57; 338pp; English.
XX
CC The present invention relates to a method for stimulating an immune
CC response. The method comprises administering an immunostimulatory nucleic
CC acid to a non-rodent subject in sufficient quantity to stimulate an
CC immune response. The present sequence is one such immunostimulatory
CC nucleic acid. The immunostimulatory nucleic acids can be pyrimidine rich
CC (py-rich) or thymidine (T) rich. The method is used to vaccinate subjects
CC against tumour antigens, viral antigens (e.g. herpesviridae, retroviridae
CC and/or orthomyxoviridae), bacterial antigens (e.g. toxoplasma,
CC haemophilus, campylobacter, clostridium, Escherichia coli and/or
CC staphylococcus), fungal antigens and/or parasitic antigens. The method is
CC also useful for preventing cancer, asthma, infectious disease, allergy or
CC immune deficiency. The present sequence can also be used to redirect a
CC Th2 to a Th1 immune response and to activate immune cells.
CC Note: the present sequence may have a phosphorothioate backbone.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

Search completed: June 6, 2002, 01:51:48
Job time: 4032 sec

DT 12-JUN-2001 (first entry)
XX
DE Immunostimulatory nucleic acid #506.
XX
KW Vaccine; cytostatic; virucidal; bactericidal; fungicidal; anti-parasitic;
KW immunostimulatory; tumour; viral infection; bacterial infection;
KW fungal infection; parasitic infection; cancer; asthma;
KW infectious disease; allergy; immune deficiency; phosphorothioate; ss.
XX
OS Synthetic.
XX
PN WO200122972-A2.
XX
PD 05-APR-2001.
XX
PF 25-SEP-2000; 2000WO-US26383.
XX
PR 25-SEP-1999; 99US-0156113.
PR 27-SEP-1999; 99US-0156135.
PR 23-AUG-2000; 2000US-0227436.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GMBH.
XX
PI Krieg AM, Schetter C, Vollmer J;
XX
DR WPI; 2001-273485/28.
XX
PT Vaccinating against tumors, infectious diseases, allergies and asthma
PT using immunostimulatory Py-rich and TG nucleic acids -
XX
PS Claim 101; Page 48; 338pp; English.
XX
CC The present invention relates to a method for stimulating an immune
CC response. The method comprises administering an immunostimulatory nucleic
CC acid to a non-rodent subject in sufficient quantity to stimulate an
CC immune response. The present sequence is one such immunostimulatory
CC nucleic acid. The immunostimulatory nucleic acids can be pyrimidine rich
CC (py-rich) or thymidine (T) rich. The method is used to vaccinate subjects
CC against tumour antigens, viral antigens (e.g. herpesviridae, retroviridae
CC and/or orthomyxoviridae), bacterial antigens (e.g. toxoplasma,
CC haemophilus, campylobacter, clostridium, Escherichia coli and/or
CC staphylococcus), fungal antigens and/or parasitic antigens. The method is
CC also useful for preventing cancer, asthma, infectious disease, allergy or
CC immune deficiency. The present sequence can also be used to redirect a
CC Th2 to a Th1 immune response and to activate immune cells.
CC Note: the present sequence may have a phosphorothioate backbone.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

RESULT 13
AAF99567
ID AAF99567 standard; DNA; 20 BP.
XX
AC AAF99567;
XX
DT 12-JUN-2001 (first entry)
XX
DE Immunostimulatory nucleic acid #683.
XX
KW Vaccine; cytostatic; virucidal; bactericidal; fungicidal; anti-parasitic;
KW immunostimulatory; tumour; viral infection; bacterial infection;
KW fungal infection; parasitic infection; cancer; asthma;
KW infectious disease; allergy; immune deficiency; phosphorothioate; ss.
XX
OS Synthetic.
XX
PN WO200122972-A2.
XX
PD 05-APR-2001.
XX
PF 25-SEP-2000; 2000WO-US26383.
XX
PR 25-SEP-1999; 99US-0156113.
PR 27-SEP-1999; 99US-0156135.
PR 23-AUG-2000; 2000US-0227436.
XX
PA (IOWA) UNIV IOWA RES FOUND.
PA (COLE-) COLEY PHARM GMBH.
XX
PI Krieg AM, Schetter C, Vollmer J;
XX
DR WPI; 2001-273485/28.
XX
PT Vaccinating against tumors, infectious diseases, allergies and asthma
PT using immunostimulatory Py-rich and TG nucleic acids -
XX
PS Claim 101; Page 53; 338pp; English.
XX
CC The present invention relates to a method for stimulating an immune
CC response. The method comprises administering an immunostimulatory nucleic
CC acid to a non-rodent subject in sufficient quantity to stimulate an
CC immune response. The present sequence is one such immunostimulatory
CC nucleic acid. The immunostimulatory nucleic acids can be pyrimidine rich
CC (py-rich) or thymidine (T) rich. The method is used to vaccinate subjects
CC against tumour antigens, viral antigens (e.g. herpesviridae, retroviridae
CC and/or orthomyxoviridae), bacterial antigens (e.g. toxoplasma,
CC haemophilus, campylobacter, clostridium, Escherichia coli and/or
CC staphylococcus), fungal antigens and/or parasitic antigens. The method is
CC also useful for preventing cancer, asthma, infectious disease, allergy or
CC immune deficiency. The present sequence can also be used to redirect a
CC Th2 to a Th1 immune response and to activate immune cells.
CC Note: the present sequence may have a phosphorothioate backbone.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 22; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

RESULT 14
AAF99763
ID AAF99763 standard; DNA; 20 BP.
XX
AC AAF99763;
XX
DT 12-JUN-2001 (first entry)
XX
DE Immunostimulatory nucleic acid #879.
XX
KW Vaccine; cytostatic; virucidal; bactericidal; fungicidal; anti-parasitic;
KW immunostimulatory; tumour; viral infection; bacterial infection;
KW fungal infection; parasitic infection; cancer; asthma;
KW infectious disease; allergy; immune deficiency; phosphorothioate; ss.
XX
OS Synthetic.
XX
PN WO200122972-A2.
XX
PD 05-APR-2001.

```
CC   sclerosis). The present sequence represents a CpG motif containing
CC   oligonucleotide used in examples demonstrating that CpG oligonucleotides
CC   can activate the MAPK pathways and NF-kappaB.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match           100.0%;  Score 20;  DB 22;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT  10
AAF98731
ID   AAF98731 standard; DNA; 20 BP.
XX
AC   AAF98731;
XX
DT   11-JUN-2001  (first entry)
XX
DE   Human IFN-alpha immunostimulatory nucleic acid SEQ ID NO: 1.
XX
KW   Immunostimulatory nucleic acid; ISNA; human; interferon alpha; IFN-alpha;
KW   viral infection; phosphorothioate backbone; palindrome; cancer; ds.
XX
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
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FT                    /mod_base= "OTHER"
FT                    /note= "phosphorothioate linkage"
FT   modified_base    15..19
FT                    /*tag=  b
FT                    /mod_base= "OTHER"
FT                    /note= "phosphorothioate linkage"
XX
PN   WO200122990-A2.
XX
PD   05-APR-2001.
XX
PF   27-SEP-2000; 2000WO-US26527.
XX
PR   27-SEP-1999;   99US-0156147.
XX
PA   (COLE-) COLEY PHARM GROUP INC.
PA   (IOWA ) UNIV IOWA RES FOUND.
XX
PI   Hartmann G,  Bratzler RL,  Krieg A;
XX
DR   WPI; 2001-290487/30.
XX
PT   Improving the efficacy of treatments involving the administration of
PT   interferon-alpha by co-administering an isolated immunostimulatory
PT   nucleic acid -
XX
PS   Claim 19; Page 73; 168pp; English.
XX
CC   The present invention describes an improvement to a method requiring the
CC   administration of interferon alpha (IFN-alpha), involving administering
CC   an immunostimulatory nucleic acid (ISNA). The sequences of a number of
CC   such nucleic acids are also provided. These may comprise oligonucleotides
CC   with phosphorothioate backbones, palindromes, or G-rich sequences. The
CC   sequences of the invention are useful in the treatment of proliferative
CC   diseases, such as cancers, and viral infections. The present sequence is
CC   an example of an immunostimulatory oligonucleotide.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match           100.0%;  Score 20;  DB 22;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT  11
AAF98854
ID   AAF98854 standard; DNA; 20 BP.
XX
AC   AAF98854;
XX
DT   11-JUN-2001  (first entry)
XX
DE   Poly-G immunostimulatory nucleic acid SEQ ID NO: 135.
XX
KW   Immunostimulatory nucleic acid; ISNA; human; interferon alpha; IFN-alpha;
KW   viral infection; phosphorothioate backbone; palindrome; cancer; ds.
XX
OS   Synthetic.
XX
PN   WO200122990-A2.
XX
PD   05-APR-2001.
XX
PF   27-SEP-2000; 2000WO-US26527.
XX
PR   27-SEP-1999;   99US-0156147.
XX
PA   (COLE-) COLEY PHARM GROUP INC.
PA   (IOWA ) UNIV IOWA RES FOUND.
XX
PI   Hartmann G,  Bratzler RL,  Krieg A;
XX
DR   WPI; 2001-290487/30.
XX
PT   Improving the efficacy of treatments involving the administration of
PT   interferon-alpha by co-administering an isolated immunostimulatory
PT   nucleic acid -
XX
PS   Disclosure; Page 24; 168pp; English.
XX
CC   The present invention describes an improvement to a method requiring the
CC   administration of interferon alpha (IFN-alpha), involving administering
CC   an immunostimulatory nucleic acid (ISNA). The sequences of a number of
CC   such nucleic acids are also provided. These may comprise oligonucleotides
CC   with phosphorothioate backbones, palindromes, or G-rich sequences. The
CC   sequences of the invention are useful in the treatment of proliferative
CC   diseases, such as cancers, and viral infections. The present sequence is
CC   an example of an immunostimulatory oligonucleotide.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match           100.0%;  Score 20;  DB 22;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT  12
AAF99390
ID   AAF99390 standard; DNA; 20 BP.
XX
AC   AAF99390;
XX
```

```
CC   Anthrax and Listeria.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match           100.0%;  Score 20;  DB 22;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT   8
AAH50658
ID   AAH50658 standard; DNA; 20 BP.
XX
AC   AAH50658;
XX
DT   22-AUG-2001  (first entry)
XX
DE   Immune response modulating related oligonucleotide SEQ ID NO:90.
XX
KW   Immunostimulatory; inducing; natural killer cell; lytic activity;
KW   unmethylated CpG dinucleotide; immune response; B cell proliferation;
KW   Th1; immune activation; interleukin 6; IL-6; interferon gamma;
KW   IFN-gamma; cytokine; ss.
XX
OS   Synthetic.
XX
PN   US6239116-B1.
XX
PD   29-MAY-2001.
XX
PF   30-OCT-1997;   97US-0960774.
XX
PR   30-OCT-1996;   96US-0738652.
XX
PA   (IOWA ) UNIV IOWA RES FOUND.
PA   (COLE-) COLEY PHARM GROUP INC.
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Krieg AM,  Kline JN;
XX
DR   WPI; 2001-380456/40.
XX
PT   Methods for inducing Il-6, interferon-gamma or Il-12, or stimulating
PT   natural killer cell lytic activity in a human, comprise administering
PT   to the subject or exposing a natural killer cell to immunostimulatory
PT   nucleic acids  -
XX
PS   Disclosure; Column 91; 74pp; English.
XX
CC   The present invention describes methods for inducing interleukin 6
CC   (IL-6), interferon-gamma (IFN-gamma) or IL-12, or for stimulating
CC   natural killer cell lytic activity. The methods comprise administering
CC   to the subject or exposing a natural killer cell to an immunostimulatory
CC   nucleic acid. Also described are: (1) inducing IL-6 in a subject
CC   comprising administering to the subject to induce IL-6 in the subject
CC   the immunostimulatory nucleic acid; (2) stimulating natural killer cell
CC   lytic activity comprising exposing a natural killer cell to the
CC   immunostimulatory nucleic acid to stimulate natural killer cell lytic
CC   activity; (3) inducing interferon-gamma in a subject to treat an immune
CC   system deficiency comprising administering to the subject to induce
CC   interferon-gamma production, the immunostimulatory nucleic acid; and
CC   (4) inducing IL-12 in a subject comprising administering to the subject
CC   the immunostimulatory nucleic acid. The methods are useful for inducing
CC   IL-6, interferon-gamma or IL-12, or stimulating natural killer cell
CC   lytic activity in a subject, particularly a human. The methods are
CC   particularly useful for modulating an immune response. AAH50571 to
CC   AAH50671 represent oligonucleotide sequences used in the exemplification
CC   of the present invention.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match           100.0%;  Score 20;  DB 22;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 0.71;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 ggggtcaacgttgaggggggg 20


RESULT   9
AAH20394
ID   AAH20394 standard; DNA; 20 BP.
XX
AC   AAH20394;
XX
DT   03-AUG-2001  (first entry)
XX
DE   CpG motif containing oligonucleotide SEQ ID #5.
XX
KW   Immune system stimulator; CpG motif; CpG receptor; CpG-R; antibacterial;
KW   immune response; vaccine adjuvant; tumour immunotherapy; allergy;
KW   anti-inflammatory; cystic fibrosis; sepsis; heart disease; chlamydia;
KW   inflammatory bowel disease; arthritis; multiple sclerosis; ss.
XX
OS   Unidentified.
XX
FH   Key             Location/Qualifiers
FT   modified_base   1..20
FT                   /*tag=  a
FT                   /mod_base= OTHER
FT                   /note= "Phosphorothioate internucleoside linkages"
XX
PN   WO200132877-A2.
XX
PD   10-MAY-2001.
XX
PF   01-NOV-2000; 2000WO-US41735.
XX
PR   02-NOV-1999;   99US-0163157.
PR   24-NOV-1999;   99US-0167389.
XX
PA   (CHIR ) CHIRON CORP.
XX
PI   Mackichan ML;
XX
DR   WPI; 2001-343486/36.
XX
PT   Novel CpG receptor and nucleic acid molecule encoding the receptor, for
PT   modulating immune response and for identifying compounds of therapeutic
PT   use which bind and/or modulate the activity of the receptor  -
XX
PS   Example 1; Page 14; 41pp; English.
XX
CC   Unmethylated CG dinucleotide sequences are commonly found in bacterial
CC   DNA, and have been found to stimulate the innate immune system. Natural
CC   killer and T cells are activated by exposure to oligonucleotides
CC   containing CpG motifs. Oligonucleotides containing CpG motifs can be used
CC   as adjuvants in vaccines. The present invention relates to a CpG
CC   receptor. The CpG receptor contains a Toll homology domain (THD). The
CC   Toll receptor family are associated with responses to pathogens. CpG
CC   oligonucleotides may act as stimulators of various immune responses. The
CC   CpG receptor or cells expressing the receptor are useful for identifying
CC   a compound which binds to or modulates an activity of the CpG receptor.
CC   The compounds are useful in e.g. vaccine adjuvants promoting
CC   cell-mediated immune responses, antibacterials, (e.g. protection from
CC   Listeria infection), tumour immunotherapy, allergy treatment, (e.g.
CC   suppressing IgE in human PBMC, shifting from Th2 to Th1) and as
CC   anti-inflammatory agents (e.g. for use in cystic fibrosis, sepsis, heart
CC   disease, chlamydia, inflammatory bowel disease, arthritis and multiple
```

AAA90449
ID AAA90449 standard; DNA; 20 BP.
XX
AC AAA90449;
XX
DT 10-JAN-2001 (first entry)
XX
DE CpG adjuvant oligonucleotide, SEQ ID NO:3.
XX
KW CpG oligonucleotide; CpG motif; adjuvant; microdroplet emulsion;
KW microemulsion; adsorbent microparticle; vaccine; Th1 immune response;
KW viral infection; bacterial infection; parasitic infection; HCV; HBV;
KW hepatitis C virus; hepatitis B virus; herpes simplex virus; HSV; HIV;
KW human immunodeficiency virus; cytomegalovirus; CMV; influenza virus;
KW rabies virus; cholera; diphtheria; tetanus; pertussis;
KW Helicobacter pylori; Haemophilus influenzae; malaria; ss.
XX
OS Synthetic.
XX
PN WO200050006-A2.
XX
PD 31-AUG-2000.
XX
PF 09-FEB-2000; 2000WO-US03331.
XX
PR 26-FEB-1999; 99US-0121858.
PR 29-JUL-1999; 99US-0146391.
PR 28-OCT-1999; 99US-0161997.
XX
PA (CHIR) CHIRON CORP.
XX
PI O'Hagan D, Ott GS, Donnelly J, Kazzaz J, Ugozzoli M, Singh M;
PI Barackman J;
XX
DR WPI; 2000-587123/55.
XX
PT Microemulsion having an adsorbent surface comprising a microdroplet
PT emulsion consisting of a metabolizable oil and an emulsifying agent
PT which is a detergent, useful as a vaccine to treat bacterial, viral,
PT and parasitic infection -
XX
PS Claim 17; Page 40; 95pp; English.
XX
CC The invention relates to a microdroplet emulsion (microemulsion) with an
CC adsorbent surface, and which comprises a metabolisable oil and an
CC emulsifying agent (a detergent). It also relates to a composition
CC comprising the microemulsion and a microparticle with an adsorbent
CC surface, where the microparticle comprises a polymer selected from a
CC poly(alpha-hydroxy acid), a polyhydroxy butyric acid, a
CC polycaprolactone, a polyorthoester, a polyanhydride, and a
CC polycyanoacrylate, and a second detergent. The surface of the
CC microparticles efficiently adsorb biologically active macromolecules such
CC as DNA, polypeptides, antigens, hormones, pharmaceuticals, enzymes,
CC mediators of transcription or translation, metabolic intermediates and
CC adjuvants. Additionally, a second biologically active molecule may be
CC encapsulated within the microparticle. The microemulsion can be used in
CC methods of immunising a host animal, particularly a human, against a
CC viral, bacterial or parasitic infection, and in methods of increasing a
CC Th1 immune response. The microemulsions (having the appropriate antigens
CC adsorbed) may be particularly used as vaccines for hepatitis C virus
CC (HCV), hepatitis B virus (HBV), herpes simplex virus (HSV), human
CC immunodeficiency virus (HIV), cytomegalovirus (CMV), influenza virus, and
CC rabies virus; the bacteria which cause cholera, diphtheria, tetanus and
CC pertussis; Helicobacter pylori and Haemophilus influenzae; and
CC malaria-causing parasites. Sequences AAA90447-A90467 represent Th1
CC lymphocyte stimulating oligonucleotides containing at least one CpG motif
CC which are claimed for use as adjuvants in the compositions of the
CC invention.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 21; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ggggtcaacgttgaggggg 20
||||||||||||||||||||
Db 1 ggggtcaacgttgaggggg 20

RESULT 7
AAS09639
ID AAS09639 standard; DNA; 20 BP.
XX
AC AAS09639;
XX
DT 26-SEP-2001 (first entry)
XX
DE Immunoreactive CpG sequence-containing oligonucleotide #89.
XX
KW CpG sequence; immune response; non-B cell activation; interferon gamma;
KW IFN-gamma; humoral; antibody production; interleukin-6 production;
KW therapeutic; allergy; asthma; cancer; autoimmune disorder; infection;
KW bio-warfare; vaccine; antisense therapy; eczema; allergic rhinitis;
KW coryza; hay fever; urticaria; hives; food allergy; atopic condition;
KW hepatitis; human immunodeficiency virus; HIV; malaria; Francisella;
KW lupus erythematosus; rheumatoid arthritis; multiple sclerosis;
KW schistosomiasis; tuberculosis; acquired immunodeficiency syndrome; AIDS;
KW Leishmania; Ebola; Anthrax; Listeria; ss.
XX
OS Synthetic.
XX
PN WO200151500-A1.
XX
PD 19-JUL-2001.
XX
PF 12-JAN-2001; 2001WO-US01122.
XX
PR 14-JAN-2000; 2000US-0176115.
XX
PA (USSH) US DEPT HEALTH & HUMAN SERVICES.
XX
PI Klinman D, Ishii K, Verthelyi D;
XX
DR WPI; 2001-442129/47.
XX
PT Oligodeoxynucleotides for inducing an immune response to treat and
PT prevent an allergic reaction, cancer, an autoimmune disorder and
PT symptoms resulting from exposure to bio-warfare agents, comprise
PT multiple CpG sequences -
XX
PS Claim 5; Page 42; 48pp; English.
XX
CC AAS09551-AAS09662 represent oligodeoxynucleotides (ODN) of at least 10
CC nucleotides comprising multiple CpG sequences, where one of the CpG
CC sequences is different from another of the multiple CpG sequences.
CC The ODN are useful for inducing an immune response, preferably a cell-
CC mediated immune response, involving non-B cell activation, interferon
CC gamma (IFN-gamma) production or a humoral immune response involving B
CC cell activation, antibody and interleukin-6 production in a host, for
CC treating, preventing or ameliorating an allergic reaction, e.g. asthma,
CC cancer, e.g. solid tumour cancer, a disease associated with the immune
CC system e.g. autoimmune disorder or an immune system deficiency, infection
CC or a symptom resulting from exposure to bio-warfare agent in a human. The
CC induction of immune response improves the efficacy of a vaccine and is
CC used in antisense therapy. The ODN are useful for treating, preventing or
CC ameliorating allergic reactions, including eczema, allergic rhinitis or
CC coryza, hay fever, bronchial asthma, urticaria (hives), food allergies
CC and other atopic conditions, for improving the efficacy of vaccines
CC against hepatitis A, B and C, human immunodeficiency virus (HIV) and
CC malaria, for treating immune system deficiencies, e.g. lupus
CC erythematosus and autoimmune diseases such as rheumatoid arthritis and
CC multiple sclerosis, infections including Francisella, schistosomiasis,
CC tuberculosis, acquired immunodeficiency syndrome (AIDS), Leishmania and
CC symptoms resulting from exposure of bio-warfare agent, including Ebola,

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XX
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RESULT   4
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XX
AC   AAV74238;
XX
DT   15-MAR-1999  (first entry)
XX
DE   CpG-N motif S-ODN 1628 DNA.
XX
KW   CpG-N motif; immunostimulation; antigen; CpG-S motif; immunisation; ODN;
KW   viral antigen; bacterial antigen; parasite; therapeutic; growth factor;
KW   toxin; tumour suppressor; cytokine; apoptotic protein; interferon;
KW   hormone; clotting factor; ligand; receptor; oligodeoxynucleotide; ss.
XX
OS   Synthetic.
XX
PN   WO9852581-A1.
XX
PD   26-NOV-1998.
XX
PF   20-MAY-1998;   98WO-US10408.
XX
PR   20-MAY-1997;   97US-0047233.
PR   20-MAY-1997;   97US-0047209.
XX
PA   (OTTA-) OTTAWA CIVIC HOSPITAL LOEB RES INST.
PA   (QIAG-) QIAGEN GMBH.
PA   (IOWA-) UNIV IOWA RES FOUND.
XX
PI   Davis HL,  Krieg AM,  Schorr J,  Wu T;
XX
DR   WPI; 1999-059712/05.
XX
PT   Use of neutralising CpG and stimulating CpG motifs in DNA vectors -
PT   for enhancing the immunostimulatory effect of an antigen or
PT   enhancing the expression of a therapeutic polypeptide
XX
PS   Example 1; Page 64; 109pp; English.
XX
CC   AAV74237-V74253 are oligodeoxynucleotide (ODN) primers used to describe
CC   a method for enhancing the immunostimulatory effect of an antigen
CC   encoded by nucleic acid contained in a nucleic acid construct. The
CC   method involves determining the CpG-N and CpG-S motifs present in the
CC   construct, removing neutralising CpG (CpG-N) motifs and optionally
CC   inserting stimulatory CpG (CpG-S) motifs in the construct, thereby
CC   producing a nucleic acid construct having enhanced immunostimulatory
CC   efficacy. The method can be used for immunisation against viral antigens,
CC   e.g. from hepatitis B virus (HBV), bacterial antigens or an antigen
CC   derived from a parasite.  They can also be used for expression of a
CC   therapeutic polypeptide, e.g. growth factors, toxins, tumour suppressors,
CC   cytokines, apoptotic proteins, interferons, hormones, clotting factors,
CC   ligands and receptors.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


  Query Match           100.0%;  Score 20;  DB 20;  Length 20;
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ID   AAV74245 standard; DNA; 20 BP.
XX
AC   AAV74245;
XX
DT   15-MAR-1999  (first entry)
XX
DE   CpG-N motif SOS-ODN 1585 DNA.
XX
KW   CpG-N motif; immunostimulation; antigen; CpG-S motif; immunisation; ODN;
KW   viral antigen; bacterial antigen; parasite; therapeutic; growth factor;
KW   toxin; tumour suppressor; cytokine; apoptotic protein; interferon;
KW   hormone; clotting factor; ligand; receptor; oligodeoxynucleotide; ss.
XX
OS   Synthetic.
XX
PN   WO9852581-A1.
XX
PD   26-NOV-1998.
XX
PF   20-MAY-1998;   98WO-US10408.
XX
PR   20-MAY-1997;   97US-0047233.
PR   20-MAY-1997;   97US-0047209.
XX
PA   (OTTA-) OTTAWA CIVIC HOSPITAL LOEB RES INST.
PA   (QIAG-) QIAGEN GMBH.
PA   (IOWA-) UNIV IOWA RES FOUND.
XX
PI   Davis HL,  Krieg AM,  Schorr J,  Wu T;
XX
DR   WPI; 1999-059712/05.
XX
PT   Use of neutralising CpG and stimulating CpG motifs in DNA vectors -
PT   for enhancing the immunostimulatory effect of an antigen or
PT   enhancing the expression of a therapeutic polypeptide
XX
PS   Example 1; Page 64; 109pp; English.
XX
CC   AAV74237-V74253 are oligodeoxynucleotide (ODN) primers used to describe
CC   a method for enhancing the immunostimulatory effect of an antigen
CC   encoded by nucleic acid contained in a nucleic acid construct. The
CC   method involves determining the CpG-N and CpG-S motifs present in the
CC   construct, removing neutralising CpG (CpG-N) motifs and optionally
CC   inserting stimulatory CpG (CpG-S) motifs in the construct, thereby
CC   producing a nucleic acid construct having enhanced immunostimulatory
CC   efficacy. The method can be used for immunisation against viral antigens,
CC   e.g. from hepatitis B virus (HBV), bacterial antigens or an antigen
CC   derived from a parasite.  They can also be used for expression of a
CC   therapeutic polypeptide, e.g. growth factors, toxins, tumour suppressors,
CC   cytokines, apoptotic proteins, interferons, hormones, clotting factors,
CC   ligands and receptors.
XX
SQ   Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;


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RESULT   6
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XX
PS Claim 5; Page 39; 45pp; English.
XX
CC AAT16894-T16898 are immunomodulatory oligonucleotides contg. at least
CC one unmethylated C-G dinucleotide. The oligonucleotides can be used
CC to activate B cells and natural killer cells. They can be used for
CC treating, preventing or ameliorating an immune system deficiency,
CC e.g. a tumour, cancer or a viral, fungal, bacterial or parasitic
CC infection. They are also useful in stimulating a subject's response
CC to a vaccine.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 17; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

RESULT 2
AAV47684
ID AAV47684 standard; DNA; 20 BP.
XX
AC AAV47684;
XX
DT 20-NOV-1998 (first entry)
XX
DE Unmethylated CpG dinucleotide 1585.
XX
KW Unmethylated CpG dinucleotide; immune response; bacterial meningitis;
KW natural killer cell activation; NK cell; Th2 response; neonatal sepsis;
KW pulmonary disorder; asthma; environmentally induced airway disease;
KW bacterial infection; endotoxaemia; therapy; cystic fibrosis;
KW inflammatory bowel disease; ss.
XX
OS Synthetic.
XX
PN WO9837919-A1.
XX
PD 03-SEP-1998.
XX
PF 25-FEB-1998; 98WO-US03678.
XX
PR 28-FEB-1997; 97US-0039405.
XX
PA (IOWA) UNIV IOWA RES FOUND.
XX
PI Krieg AM, Schwartz DA;
XX
DR WPI; 1998-480941/41.
XX
PT Use of nucleic acids containing an unmethylated CpG - for treating a
PT subject having or at risk of having an acute decrement in air flow
PT or inhibiting an inflammatory response
XX
PS Claim 35; Page 27; 65pp; English.
XX
CC This sequence represents an unmethylated CpG dinucleotide, and can be
CC used in the method of the invention. The method is for treating a subject
CC having, or at risk of having an acute decrement in air flow, comprising
CC administering a nucleic acid sequence containing at least one
CC unmethylated CpG. The nucleic acids containing an unmethylated CpG
CC dinucleotide affect an immune response in a subject by activating natural
CC killer cells (NK) or redirecting a subject's immune response from a Th2
CC to a Th1 response by inducing monocytic and other cells to produce Th1
CC cytokines. They can be used to treat pulmonary disorders having an
CC immunologic component, such as asthma or environmentally induced airway
CC disease. They can also be used to treat diseases associated with
CC Gram-positive bacterial infections or endotoxaemia including bacterial
CC meningitis, neonatal sepsis, cystic fibrosis, inflammatory bowel disease
CC and liver cirrhosis, Gram-negative pneumonia, Gram-negative abdominal
CC abscess, haemorrhagic shock, disseminated intravascular coagulation, or
CC an inflammatory response to lipopolysaccharide.
XX
SQ Sequence 20 BP; 3 A; 2 C; 12 G; 3 T; 0 other;

Query Match 100.0%; Score 20; DB 19; Length 20;
Best Local Similarity 100.0%; Pred. No. 0.71;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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||||||||||||||||||||
Db 1 ggggtcaacgttgaggggggg 20

RESULT 3
AAV27654
ID AAV27654 standard; DNA; 20 BP.
XX
AC AAV27654;
XX
DT 01-OCT-1998 (first entry)
XX
DE Immunostimulatory oligodeoxyribonucleotide of the invention.
XX
KW Immunostimulatory; oligodeoxyribonucleotide; ODN;
KW unmethylated CpG dinucleotide; activate; lymphocyte; immune response;
KW Th2; Th1; cytokine; treatment; prevention; asthma; autoimmune disease;
KW desensitisation therapy; artificial adjuvant; antibody generation; ss.
XX
OS Synthetic.
XX
PN WO9818810-A1.
XX
PD 07-MAY-1998.
XX
PF 30-OCT-1997; 97WO-US19791.
XX
PR 30-OCT-1996; 96US-0738652.
XX
PA (IOWA) UNIV IOWA RES FOUND.
XX
PI Kline JN, Krieg AM;
XX
DR WPI; 1998-272127/24.
XX
PT New immunostimulatory nucleic acid molecules - which contain at
PT least one unmethylated CpG dinucleotide, used for treating e.g.
PT tumours, infections or autoimmune disease
XX
PS Claim 26; Page 83; 109pp; English.
XX
CC AAV27641-751 represent immunostimulatory oligodeoxyribonucleotides
CC (ODNs) of the invention. The ODNs contain at least one unmethylated CpG
CC dinucleotide, and have the formula:
CC 5' N1X1CGX2N2 3', where at least one nucleotide separates consecutive
CC CpGs, X1 is adenine, guanine, or thymine, X2 is cytosine or thymine, N
CC is any nucleotide and N1+N2 is 0-26 bases with the provision that N1 and
CC N2 does not contain a CCGG tetramer or more than one CCG or CGG trimer
CC OR 5' NX1X2CGX3X4N 3', where at least one nucleotide separates
CC consecutive CpGs, X1 and X2 are selected from GpT, GpG, GpA, ApT and ApA,
CC X3and X4 are selected from TpT or CpT, N is any nucleotide and N1+N2 is
CC 0-26 bases with the provision that N1 and N2 does not contain a CCGG
CC tetramer or more than one CCG or CGG trimer.
CC The ODNs activate lymphocytes in a subject and redirect a subject's
CC immune response from a Th2 to a Th1 (e.g. by inducing monocytic cells
CC and other cells to produce Th1 cytokines, including IL-12, IFN-gamma and
CC GM-CSF). The ODNs can be used to treat or prevent an asthmatic disorder,
CC autoimmune diseases, in desensitisation therapy, as an artificial
CC adjuvant during antibody generation in a mammal such as a mouse or a
CC human.

GenCore version 4.5

OM nucleic - nucleic search, using sw model

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(without alignments)
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Scoring table: IDENTITY_NUC
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Searched: 1736436 seqs, 858457221 residues

Total number of hits satisfying chosen parameters: 1967958

Minimum DB seq length: 0
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Post-processing: Minimum Match 0%
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Listing first 45 summaries

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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1	20	100.0	20	17	AAT16894	Immunomodulatory o
2	20	100.0	20	19	AAV47684	Unmethylated CpG d
3	20	100.0	20	19	AAV27654	Immunostimulatory
4	20	100.0	20	20	AAV74238	CpG-N motif S-ODN
5	20	100.0	20	20	AAV74245	CpG-N motif SOS-OD
6	20	100.0	20	21	AAA90449	CpG adjuvant oligo
7	20	100.0	20	22	AAS09639	Immunoreactive CpG
8	20	100.0	20	22	AAH50658	Immune response mo
9	20	100.0	20	22	AAH20394	CpG motif containi
10	20	100.0	20	22	AAF98731	Human IFN-alpha im
11	20	100.0	20	22	AAF98854	Poly-G immunostimu
12	20	100.0	20	22	AAF99390	Immunostimulatory
13	20	100.0	20	22	AAF99567	Immunostimulatory
14	20	100.0	20	22	AAF99763	Immunostimulatory
15	20	100.0	20	22	AAF99764	Immunostimulatory
16	20	100.0	20	22	AAF59504	Immunostimulatory
17	20	100.0	20	22	AAF27750	P. falciparum vacc
18	20	100.0	20	22	AAC80669	Immunogenic CpG ol
19	20	100.0	20	22	AAA92361	CG motif and CFA c
20	20	100.0	20	22	AAH19262	Oligonucleotide 15
21	20	100.0	21	22	AAF98875	Immunostimulatory
22	20	100.0	21	22	AAF99798	Immunostimulatory
23	20	100.0	24	22	AAF99389	Immunostimulatory
24	19	95.0	19	22	AAS09596	Immunoreactive CpG
25	19	95.0	19	22	AAC80626	Immunogenic CpG ol
26	18.4	92.0	20	19	AAV27677	Immunostimulatory
27	18.4	92.0	20	21	AAZ48834	B-cell stimulating
28	18.4	92.0	20	22	AAD02961	Immunostimulatory
29	17.4	87.0	19	19	AAV52539	Unmethylated CpG d
30	17.4	87.0	19	20	AAZ41898	IL-12 secretion in
31	17.4	87.0	19	21	AAZ60970	Nucleotide sequenc
32	17.4	87.0	19	21	AAZ47638	Parasitic infectio
33	17.4	87.0	19	21	AAZ47845	Immunostimulatory
34	17.4	87.0	19	21	AAZ47974	Immune remodeling
35	17.4	87.0	19	22	AAH50582	Natural killer cel
36	17.4	87.0	19	22	AAF98795	CpG immunostimulat
37	16.8	84.0	20	21	AAZ99181	Immunostimulatory
38	16.8	84.0	20	22	AAS09641	Immunoreactive CpG
39	16.8	84.0	20	22	AAF98735	Human IFN-alpha im
40	16.8	84.0	20	22	AAF98736	Human IFN-alpha im
41	16.8	84.0	20	22	AAF98754	Human IFN-alpha im
42	16.8	84.0	20	22	AAF98855	Poly-G immunostimu
43	16.8	84.0	20	22	AAF98870	Immunostimulatory
44	16.8	84.0	20	22	AAF99231	Immunostimulatory
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ALIGNMENTS

RESULT 1
AAT16894
ID AAT16894 standard; DNA; 20 BP.
XX
AC AAT16894;
XX
DT 06-SEP-1996 (first entry)
XX
DE Immunomodulatory oligonucleotide contg. unmethylated C-G dinucleotide.
XX
KW Unmethylated; immunomodulator; B cell activation; vaccine;
KW response stimulation; autoimmune disease; infection; ss.
XX
OS Synthetic.
XX
PN WO9602555-A1.
XX
PD 01-FEB-1996.
XX
PF 07-FEB-1995; 95WO-US01570.
XX
PR 15-JUL-1994; 94US-0276358.
XX
PA (IOWA) UNIV IOWA STATE RES FOUND INC.
XX
PI Krieg AM;
XX
DR WPI; 1996-105847/11.
XX
PT Immunomodulatory oligo:nucleotide(s) contg. an un-methylated CpG
PT di-nucleotide - used for stimulating activity or when methylated
PT for inhibitory activity

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ORIGIN


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LOCUS       BD009060                  20 bp    DNA     linear   PAT 31-JAN-2002
DEFINITION  Immunostimulatory nucleic acid molecules.
ACCESSION   BD009060
VERSION     BD009060.1  GI:18637433
KEYWORDS    JP 2001503267-A/12.
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M. and Kline,J.N.
  TITLE     Immunostimulatory nucleic acid molecules
  JOURNAL   Patent: JP 2001503267-A 12 13-MAR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION
COMMENT     OS   Artificial Sequence
            PN   JP 2001503267-A/12
            PD   13-MAR-2001
            PF   30-OCT-1997 JP 1998520784
            PR   30-OCT-1996 US    08/738652
            PI   ARTHUR M KRIEG,JOEL N KLINE
            PC   C07H21/00,C07H21/02,C07H21/04,A61K31/175,A61K31/335,A61K31/47,
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            interferon
  JOURNAL   Patent: WO 0122990-A 135 05-APR-2001;
            Coley Pharmaceutical Group, Inc. (US) ; UNIVERSITY OF IOWA RESEARCH
            FOUNDATION (US)
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LOCUS       AX135634                  20 bp    DNA     linear   PAT 29-MAY-2001
DEFINITION  Sequence 5 from Patent WO0132877.
ACCESSION   AX135634
VERSION     AX135634.1  GI:14271904
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Mackichan,M.L.
  TITLE     Cpg receptor (cpg-r) and methods relating thereto
  JOURNAL   Patent: WO 0132877-A 5 10-MAY-2001;
            CHIRON CORPORATION (US)
FEATURES             Location/Qualifiers
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ORIGIN


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RESULT  12
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DEFINITION  Sequence 89 from Patent WO0151500.
ACCESSION   AX194489
VERSION     AX194489.1  GI:15385145
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Klinman,D., Ishii,K. and Verthelyi,D.
  TITLE     Oligodeoxynucleotide and its use to induce an immune response
  JOURNAL   Patent: WO 0151500-A 89 19-JUL-2001;
            Secretary of the Department of Health and Human Services (US)
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ORIGIN


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  Best Local Similarity   100.0%;  Pred. No. 17;
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Qy      1 ggggtcaacgttgaggggggg 20
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Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT  13
AX355408
LOCUS       AX355408                  20 bp    DNA     linear   PAT 06-FEB-2002
DEFINITION  Sequence 436 from Patent WO0197843.
ACCESSION   AX355408
VERSION     AX355408.1  GI:18620076
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (sites)
  AUTHORS   Weiner,G. and Hartmann,G.
  TITLE     Methods for enhancing antibody-induced cell lysis and treating
            cancer
  JOURNAL   Patent: WO 0197843-A 436 27-DEC-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
                     /note="Synthetic oligonucleotide-chimeric
                     phosphorothioate/phosphodiester backbone with
                     phosphorothioate at 5' and 3' ends"
BASE COUNT        3 a      2 c      12 g      3 t
ORIGIN


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  Best Local Similarity   100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
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Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT  14
AX355409
LOCUS       AX355409                  20 bp    DNA     linear   PAT 06-FEB-2002
DEFINITION  Sequence 437 from Patent WO0197843.
ACCESSION   AX355409
VERSION     AX355409.1  GI:18620077
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (sites)
  AUTHORS   Weiner,G. and Hartmann,G.
  TITLE     Methods for enhancing antibody-induced cell lysis and treating
            cancer
  JOURNAL   Patent: WO 0197843-A 437 27-DEC-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US)
FEATURES             Location/Qualifiers
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                     /note="Synthetic oligonucleotide-phosphorothioate
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            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M., Schetter,C. and Vollmer,J.C.
  TITLE     Immunostimulatory nucleic acids
  JOURNAL   Patent: WO 0122972-A 767 05-APR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US) ; Coley Pharmaceutical
            GmbH (DE)
FEATURES             Location/Qualifiers
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BASE COUNT        3 a      2 c     12 g      3 t
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Qy      1 ggggtcaacgttgagggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   7
AX104776
LOCUS       AX104776                 20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 968 from Patent WO0122972.
ACCESSION   AX104776
VERSION     AX104776.1  GI:13920973
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M., Schetter,C. and Vollmer,J.C.
  TITLE     Immunostimulatory nucleic acids
  JOURNAL   Patent: WO 0122972-A 968 05-APR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US) ; Coley Pharmaceutical
            GmbH (DE)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


  Query Match             100.0%;  Score 20;  DB 6;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgagggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   8
AX104777
LOCUS       AX104777                 20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 969 from Patent WO0122972.
ACCESSION   AX104777
VERSION     AX104777.1  GI:13920974
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M., Schetter,C. and Vollmer,J.C.
  TITLE     Immunostimulatory nucleic acids
  JOURNAL   Patent: WO 0122972-A 969 05-APR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US) ; Coley Pharmaceutical
            GmbH (DE)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


  Query Match             100.0%;  Score 20;  DB 6;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgagggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   9
AX105103
LOCUS       AX105103                 20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 1 from Patent WO0122990.
ACCESSION   AX105103
VERSION     AX105103.1  GI:13921253
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Hartmann,G.D., Bratzler,R.L. and Krieg,A.U.
  TITLE     Methods related to immunostimulatory nucleic acid-induced
            interferon
  JOURNAL   Patent: WO 0122990-A 1 05-APR-2001;
            Coley Pharmaceutical Group, Inc. (US) ; UNIVERSITY OF IOWA RESEARCH
            FOUNDATION (US)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
                     /note="Synthetic Oligonucleotide"
     misc_feature    1. .2
                     /note="Backbone has phosphorothioate linkages."
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                     /note="Backbone has phosphodiester linkages."
     misc_feature    15. .19
                     /note="Backbone has phosphorothioate linkages."
     misc_feature    20
                     /note="Backbone has phosphodiester linkages."
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


  Query Match             100.0%;  Score 20;  DB 6;  Length 20;
  Best Local Similarity   100.0%;  Pred. No. 17;
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Qy      1 ggggtcaacgttgagggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT  10
AX105236
LOCUS       AX105236                 20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 135 from Patent WO0122990.
ACCESSION   AX105236
VERSION     AX105236.1  GI:13921386
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Hartmann,G.D., Bratzler,R.L. and Krieg,A.U.
  TITLE     Methods related to immunostimulatory nucleic acid-induced
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  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   2
AR154761
LOCUS       AR154761                  20 bp    DNA     linear   PAT 08-AUG-2001
DEFINITION  Sequence 90 from patent US 6239116.
ACCESSION   AR154761
VERSION     AR154761.1  GI:15122814
KEYWORDS    .
SOURCE      Unknown.
  ORGANISM  Unknown.
            Unclassified.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M. and Kline,J.N.
  TITLE     Immunostimulatory nucleic acid molecules
  JOURNAL   Patent: US 6239116-A 90 29-MAY-2001;
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="unknown"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


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Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   3
AX063578
LOCUS       AX063578                  20 bp    DNA     linear   PAT 24-JAN-2001
DEFINITION  Sequence 4 from Patent WO0100231.
ACCESSION   AX063578
VERSION     AX063578.1  GI:12541302
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Cohen,J., Garcon,N. and Voss,G.
  TITLE     Vaccines
  JOURNAL   Patent: WO 0100231-A 4 04-JAN-2001;
            SMITHKLINE BEECHAM BIOLOGICALS S.A. (BE)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
                     /note="oligonucleotide-nucleotides 1,2,15,16,17,18 and 19
                     have linkages with a thioate modification"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


  Query Match           100.0%;  Score 20;  DB 6;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   4
AX088932
LOCUS       AX088932                  20 bp    DNA     linear   PAT 17-MAR-2001
DEFINITION  Sequence 4 from Patent WO0100232.
ACCESSION   AX088932
VERSION     AX088932.1  GI:13397690
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Garcon,N. and Voss,G.
  TITLE     Vaccine
  JOURNAL   Patent: WO 0100232-A 4 04-JAN-2001;
            SmithKline Beecham Biologics SA (BE)
FEATURES             Location/Qualifiers
     source          1. .20
                     /organism="synthetic construct"
                     /db_xref="taxon:32630"
                     /note="CpG containing oligonucleotide"
BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


  Query Match           100.0%;  Score 20;  DB 6;  Length 20;
  Best Local Similarity  100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   5
AX104327
LOCUS       AX104327                  20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 519 from Patent WO0122972.
ACCESSION   AX104327
VERSION     AX104327.1  GI:13920524
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
            artificial sequence.
REFERENCE   1  (bases 1 to 20)
  AUTHORS   Krieg,A.M., Schetter,C. and Vollmer,J.C.
  TITLE     Immunostimulatory nucleic acids
  JOURNAL   Patent: WO 0122972-A 519 05-APR-2001;
            UNIVERSITY OF IOWA RESEARCH FOUNDATION (US) ; Coley Pharmaceutical
            GmbH (DE)
FEATURES             Location/Qualifiers
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BASE COUNT        3 a      2 c     12 g      3 t
ORIGIN


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  Best Local Similarity  100.0%;  Pred. No. 17;
  Matches   20;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      1 ggggtcaacgttgaggggggg 20
          ||||||||||||||||||||
Db      1 GGGGTCAACGTTGAGGGGGG 20


RESULT   6
AX104575
LOCUS       AX104575                  20 bp    DNA     linear   PAT 30-APR-2001
DEFINITION  Sequence 767 from Patent WO0122972.
ACCESSION   AX104575
VERSION     AX104575.1  GI:13920772
KEYWORDS    .
SOURCE      synthetic construct.
  ORGANISM  synthetic construct
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GenCore version 4.5

OM nucleic - nucleic search, using sw model

Run on: June 5, 2002, 22:50:07 ; Search time 1864.42 Seconds
(without alignments)
224.483 Million cell updates/sec

Title: US-09-655-319-12
Perfect score: 20
Sequence: 1 ggggtcaacgttgagggggg 20

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 1797656 seqs, 10463268293 residues

Total number of hits satisfying chosen parameters: 3595312

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : GenEmbl:*
1: gb_ba:*
2: gb_htg:*
3: gb_in:*
4: gb_om:*
5: gb_ov:*
6: gb_pat:*
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8: gb_pl:*
9: gb_pr:*
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11: gb_sts:*
12: gb_sy:*
13: gb_un:*
14: gb_vi:*
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16: em_fun:*
17: em_hum:*
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30: em_htg_hum:*
31: em_htg_inv:*
32: em_htg_other:*
33: em_htgo_inv:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	20	100.0	20	6	AR140453	AR140453 Sequence
2	20	100.0	20	6	AR154761	AR154761 Sequence
3	20	100.0	20	6	AX063578	AX063578 Sequence
4	20	100.0	20	6	AX088932	AX088932 Sequence
5	20	100.0	20	6	AX104327	AX104327 Sequence
6	20	100.0	20	6	AX104575	AX104575 Sequence
7	20	100.0	20	6	AX104776	AX104776 Sequence
8	20	100.0	20	6	AX104777	AX104777 Sequence
9	20	100.0	20	6	AX105103	AX105103 Sequence
10	20	100.0	20	6	AX105236	AX105236 Sequence
11	20	100.0	20	6	AX135634	AX135634 Sequence
12	20	100.0	20	6	AX194489	AX194489 Sequence
13	20	100.0	20	6	AX355408	AX355408 Sequence
14	20	100.0	20	6	AX355409	AX355409 Sequence
15	20	100.0	20	6	BD009060	BD009060 Immunosti
16	20	100.0	21	6	AX104812	AX104812 Sequence
17	20	100.0	21	6	AX105257	AX105257 Sequence
18	20	100.0	24	6	AX104326	AX104326 Sequence
19	19	95.0	19	6	AX194446	AX194446 Sequence
20	18.4	92.0	20	6	AR096686	AR096686 Sequence
21	18.4	92.0	20	6	AR135030	AR135030 Sequence
22	18.4	92.0	20	6	AX342378	AX342378 Sequence
23	18.4	92.0	20	6	AX342405	AX342405 Sequence
24	18.4	92.0	20	6	AX342438	AX342438 Sequence
25	17.4	87.0	19	6	AR146340	AR146340 Sequence
26	17.4	87.0	19	6	AR154683	AR154683 Sequence
27	17.4	87.0	19	6	AX105169	AX105169 Sequence
28	16.8	84.0	20	6	AX023253	AX023253 Sequence
29	16.8	84.0	20	6	AX104167	AX104167 Sequence
30	16.8	84.0	20	6	AX104717	AX104717 Sequence
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32	16.8	84.0	20	6	AX104787	AX104787 Sequence
33	16.8	84.0	20	6	AX104851	AX104851 Sequence
34	16.8	84.0	20	6	AX105107	AX105107 Sequence
35	16.8	84.0	20	6	AX105108	AX105108 Sequence
36	16.8	84.0	20	6	AX105126	AX105126 Sequence
37	16.8	84.0	20	6	AX105237	AX105237 Sequence
38	16.8	84.0	20	6	AX105252	AX105252 Sequence
39	16.8	84.0	20	6	AX194491	AX194491 Sequence
40	16.8	84.0	20	6	AX355410	AX355410 Sequence
41	16.8	84.0	20	6	AX355415	AX355415 Sequence
42	16.8	84.0	21	6	AX104748	AX104748 Sequence
43	16.8	84.0	21	6	AX104755	AX104755 Sequence
44	16.8	84.0	21	6	AX104811	AX104811 Sequence
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ALIGNMENTS

RESULT 1
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LOCUS AR140453 20 bp DNA linear PAT 16-JUN-2001
DEFINITION Sequence 12 from patent US 6207646.
ACCESSION AR140453
VERSION AR140453.1 GI:14482949
KEYWORDS .
SOURCE Unknown.
ORGANISM Unknown.
Unclassified.
REFERENCE 1 (bases 1 to 20)
AUTHORS Krieg,A.M., Kline,J., Klinman,D. and Steinberg,A.D.
TITLE Immunostimulatory nucleic acid molecules
JOURNAL Patent: US 6207646-A 12 27-MAR-2001;
FEATURES Location/Qualifiers
source 1. .20
/organism="unknown"
BASE COUNT 3 a 2 c 12 g 3 t
ORIGIN

Query Match 100.0%; Score 20; DB 6; Length 20;
Best Local Similarity 100.0%; Pred. No. 17;